This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

**Usage guidelines**

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

**About Google Book Search**

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

# LIVINGSTONES'

# MEDICAL HAND-BOOKS.

| | |
|---|---|
| EDINBURGH MEDICAL SCHOOL GUIDE, .. .. | 1/3 |
| GREVILLE'S CHEMISTRY, with Tables,.. .. .. | 9/0 |
| MILNE'S MIDWIFERY,.. .. .. .. .. .. | 12/6 |
| HUSBAND'S (AUBREY) FORENSIC MEDICINE, AND MEDICAL POLICE, .. .. .. .. | 10/6 |
| HUSBAND'S (AUBREY) PRACTICE OF MEDICINE | 7/6 |
| HUSBAND'S (AUBREY) POCKET PRESCRIBER, .. | 1/0 |
| Do. do. do. (in Tuck, interleaved) | 3/6 |
| HUGHES' MOTOR NERVES, .. .. .. .. .. | 1/0 |
| CROOM'S MINOR GYNECOLOGY, .. .. .. .. | 6/0 |
| CRAIG'S MATERIA MEDICA, .. .. .. .. | 9/0 |
| CRAIG'S POSOLOGICAL TABLES, .. .. .. .. | 1/0 |
| WALLER'S (BRYAN) INTERSTITIAL NEPHRITIS, | 4/6 |
| MACLACHLAN'S SURGICAL ANATOMY, .. .. | 2/0 |
| SUTHERLAND on HOSPITALS & their CONSTRUCTION, | 3/0 |
| WEST'S VERTEBRATE ZOOLOGY, .. .. .. .. | 1/6 |
| CASE-TAKING BOOK FOR HOSPITALS,.. .. .. | 0/6 |

# *MINOR GYNECOLOGICAL OPERATIONS & APPLIANCES*

*Printed by James Denholm & Company*

*for*

E. & S. LIVINGSTONE, EDINBURGH

---

| | | |
|---|---|---|
| LONDON | . | SIMPKIN, MARSHALL, AND CO.; HAMILTON, ADAMS, AND CO.; KENT AND CO. |
| GLASGOW | . | PORTEOUS BROTHERS |
| DUBLIN | . | FANNIN AND CO.; GILL AND SON |

VERTICAL MESIAL SECTION
OF THE
FEMALE PELVIS
*after* SAVAGE *(Modified)*

# MANUAL

OF THE

# MINOR GYNECOLOGICAL

# OPERATIONS AND APPLIANCES

BY

J. HALLIDAY CROOM, M.D.

F.R.C.P.E., F.R.C.S.E.

LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AT THE SCHOOL OF MEDICINE

PHYSICIAN TO THE ROYAL MATERNITY HOSPITAL

PHYSICIAN FOR DISEASES OF WOMEN, WESTERN DISPENSARY

VICE-PRESIDENT OF THE OBSTETRICAL SOCIETY, EDINBURGH

---

Second Edition, Revised and Enlarged

*With 12 Plates and 40 Woodcuts*

---

EDINBURGH

E. & S. LIVINGSTONE, 57 SOUTH BRIDGE

LONDON: BAILLIÈRE, TINDALL, & COX

1883

[*All Rights Reserved*]

TO

# ALEXANDER RUSSELL SIMPSON

M.D., F.R.S.E.

PROFESSOR OF MIDWIFERY AND THE DISEASES OF WOMEN

IN THE UNIVERSITY OF EDINBURGH

THE FOLLOWING PAGES

ARE

RESPECTFULLY DEDICATED

WITH SINCERE REGARD AND MUCH GRATITUDE

BY

HIS FORMER ASSISTANT

THE AUTHOR

# PREFACE TO FIRST EDITION

If the following pages succeed in giving to the Students attending my Classes for Diseases of Women a short and practical account of the more common Gynecological Operations and Appliances, they will attain the object for which they were written. For those Diagrams which are not original, I am mainly indebted to the works of Barnes and Atthill; the others, I hope, I have sufficiently acknowledged in the context.

My thanks are due to Dr George Mackay for his assistance in seeing these pages through the press.

J. H. C.

10 Hope Street
Edinburgh, *May 1879*

# PREFACE TO SECOND EDITION

A NEW Edition of this handbook is now issued considerably enlarged and, I hope, improved.

I have introduced several operations which, though hardly "minor," appear to me not foreign to the purpose of a manual such as this.

Not a few changes have been made in the illustrations, and the sources whence those which are not original have been taken will, I trust, be found duly acknowledged. They have been, without exception, executed by Mr James Bayne, and I am indebted to him for the care he has bestowed on them.

To my friend Dr Milne Murray I desire to tender my best thanks for much valuable assistance.

J. HALLIDAY CROOM

25 CHARLOTTE SQUARE
EDINBURGH, *January 1883*

# CONTENTS

## PART I.—DIAGNOSTIC


CHAPTER I.—VAGINAL EXAMINATION

Anatomy of Vulva, Perinæum, Hymen, Vagina, Cervix, Os Uteri, Uterus, Ovaries—the Space of Douglas—Broad Ligaments—Parametrum—Indications for a Vaginal Examination—Method of making a Vaginal Examination—the Bi-manual Examination—Examination of the Abdomen—Commoner Pathological Conditions of the Generative Organs - - - 1

CHAPTER II.—THE RECTUM

Methods of Examination—Eversion of rectum—Recto-vaginal Touch—Recto-abdominal Touch—Simon's Method - - - - - - - - - - - 34

CHAPTER III.—THE BLADDER

Examination Bi-manually—with the Vesical Sound—by Dilatation of the Urethra—by Inspection - - 38

CHAPTER IV.—THE SPECULUM

Contra-indications—Varieties of Specula used—Tubular or Fergusson's—Method of Employment—Bi-valve or Cusco's—Mode of Introduction—Duckbill or Sims'—Position of Patient—Mode of Introduction - - 42

CHAPTER V.—THE SOUND

Its nature — Contra-indications — Method of Employment—Dangers - - - - - - - - 50

CHAPTER VI.—VOLSELLA AND TENACULA

Their Uses—Mode of Employment—Contra-indications - 57

CHAPTER VII.—DILATATION OF CERVIX UTERI WITH TENTS

Varieties of Tents—Relative Advantages—Indications—Dangers—Method of Introduction - - - - - 60

CHAPTER VIII.—THE ASPIRATOR

Its use (*a*) for Diagnostic purposes; (*b*) for Therapeutic purposes—Method of Employment (*a*) through Abdomen; (*b*) per Vaginam - - - - - - 68

PART II.—THERAPEUTIC

CHAPTER I.—THE VULVA

Abscess of Labium Majus—Abscess of Vulvo-Vaginal Glands—Hypertrophy of Labia Minora—Occlusion of Vulva — Warts — Condylomata — Abrasion and Ulceration—Pruritus—Abscess of Perinæum —Fissure of Ostium Vaginæ — Imperforate Hymen — Operation for Rupture of Perinæum- - - - - 71

CHAPTER II.—VAGINA

Vaginismus—Injections—Washes—Lotions—Tampon or Plug—Pessaries - - - - - - - - - 79

CHAPTER III.—URETHRA AND BLADDER

Catheterisation—Dilatation of Urethra and Neck of Bladder—Vesical Injections—Urethral Caruncle—Venous Angioma — Prolapsus Urethræ — Urethral Injections — Vesical Calculus — Faradisation of Bladder—Vesico-vaginal Fistula - - - - - 109

CHAPTER IV.—CERVICAL APPLICATIONS

Depletion — Application of Caustics — Amputation—Incision—Laceration—Trachelorrhaphy - - - 136

CHAPTER V.—INTRA-UTERINE APPLICATIONS

Caustics—Astringents—Alteratives—Curette — Fibroids and Polypi—Inversion of Uterus - - - 157

# MINOR GYNECOLOGICAL OPERATIONS AND APPLIANCES

## Part I.—Diagnostic

### CHAPTER I.

IN importance and frequency a Vaginal Examination occupies the first place among the MINOR GYNECOLOGICAL OPERATIONS.

It is essential, therefore, that the manœuvre should be described with as much accuracy as possible.

In order that the student may become accustomed to a definite method of examination, as well as for the sake of simplicity and clearness, I propose to consider a vaginal examination under three heads. 1st. To direct attention to a few anatomical and physiological facts having a practical bearing on the parts as they occur in health. 2d. The method of making a digital examination per vaginam. 3d. The more common pathological conditions to be noted.

## 1st. Practical points descriptive of the Parts as they are met with in Health.

### (*a*) Vulva

The genital cleft is formed by the apposition of the labia majora. In front these terminate in the mons veneris, and posteriorly they are fused in the perinæum.

On separating these the labia minora or nymphæ are felt. They consist of two mucous folds terminating posteriorly in the fourchette. Anteriorly they run forward, dividing into two layers; the upper ones uniting over the clitoris form its prepuce, the lower joining its base form the frenum. It is to be noted that while in the girl the labia minora are covered in by the labia majora, as age advances they become more exposed, until in the old woman they are bare.

Passing backwards from the clitoris a triangular smooth space is recognised, bounded on either side by the nymphæ—the vestibule.

In the centre of the line forming the base of this triangle, is the fibrous pouting rim of the meatus urinarius, about $\frac{4}{5}$ of an inch behind the clitoris.

Immediately behind the meatus is a rugous prominence, which forms the vulvar end of the anterior vaginal wall.

The vulvar end of the posterior vaginal wall is formed by the hymen in the virgin. Between the hymen and the fourchette is a space known as the fossa navicularis.

### (*b*) Perinæum

The space between the fourchette and the anus is called the perinæum. It has a triangular shape, and is divided in the median line by the raphe. In the nulli-

parous woman it measures from one to one and a half inch in length. In the multiparous woman it is considerably shortened, as the result of the usual tear during labour. It is not to be regarded merely as a flat surface formed of skin, areolar tissue, and muscle, but is to be looked at as a space of very considerable interest lying between rectum and vagina. It consists of a triangular wedge or body, which fills up the space between the backward curve of the rectum, and forward curve of the vagina. It is composed of strong elastic fascia and areolar tissue. Its anterior side is slightly convex, while its posterior side is concave. The anterior side sustains the inferior wall of the vagina, while its posterior side supports anterior wall of rectum. It goes to form a part, and a very important one, in the formation of the pelvic floor. It serves to give firmness and compactness to it. It must be kept in view that the perinæal body rests upon a set of muscles whose union takes place between the anus and vulva. In this way the perinæal body is thrown against the anterior wall of the vagina, to which it gives a strong support, and thus by preserving the integrity of the pelvic floor it sustains in their respective places the vagina, bladder, and uterus. The injury or destruction of the perinæal body must always be viewed as an important factor in the production of displacement and other pelvic mischief. Its immediate repair after labour should always be attempted; and when this fails, recourse should be had to some plastic operation later on.

### (*c*) Hymen

A crescentic, semilunar fold of mucous membrane, the horns of the crescent looking upwards and forwards.

It varies very considerably in different virgins, and at different periods of life, being, as a rule, most marked before puberty. Most commonly it is of the shape just mentioned, thick at the attached surface, and thin at its free border. It is often irregular and fringed, sometimes cribriform, and occasionally so developed, firm, and fibrous as to form a complete diaphragm.

Frequently, however, it is so far wanting that the introduction of one finger for examination fails to detect it, and its edge is only brought into prominence by the distension resulting from the introduction of two fingers. It should be remembered that this absence may arise from non-development, or from perfectly innocent causes. As a rule, with but little pain, and without any considerable rupture, it admits the forefinger easily enough over its anterior margin into the vagina. It stretches very readily under anæsthesia.

Under ordinary circumstances, this membrane disappears in married woman, and a few tubercles (the carunculæ myrtiformes) represent its remains. These carunculæ vary in number and appearance. Usually there are three, one on either side, and one posteriorly. Sometimes they appear as tags or polypi.

### (*d*) Vagina

*Length*—

The posterior wall is longer than the anterior, owing, (*a*) to the oblique insertion of the cervix into the anterior wall; and (*b*) to the curve of the pelvis and perinæum. The posterior wall measures from 3 to 4, and the anterior about 2 inches. The vagina is longer in virgins than in married and multiparous women.

*Rugæ—*

These are very numerous in virgins. After repeated sexual intercourse they disappear on the posterior wall, but remain on the anterior. In multiparæ they disappear entirely, except at the lower vulvar portion of the anterior wall.

*Capacity—*

The vaginal walls in health lie in close apposition. This is very apt to be forgotten or overlooked. It must be distinctly understood that the walls touch each other throughout their whole extent, except at the cervical insertion. In the living subject the vagina does not gape. The anterior wall of the vagina rests on the posterior, and is supported by it. Henle's transverse section of the vagina, represented by the following diagram, shows this.

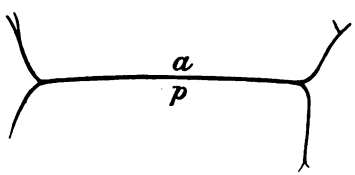



FIG. 1.—Transverse Section of Vagina.
*a.* Anterior wall. *p.* Posterior wall (*Henle*).

Here the anterior and posterior walls are seen lying distinctly in contact. The ordinary wall plates and diagrams, such as those of Kolrausch or Savage, are apt to convey to the student the idea that the vagina is a canal. This is not the case any more than the urethra can be called a canal, unless it is distended by a catheter or a bougie. This will be apparent to any one who will

take the trouble to pass a small speculum on even a multiparous woman. The vagina only becomes a tube when a foreign body, such as a speculum or a pessary, is introduced.

The narrowest portion is at the vulvar end, the widest and most dilatable part is at the roof. This is to be kept in view in the introduction of the Cusco speculum and in the adjustment of pessaries.

*Sensibility*—

Except when the hymen is stretched, the introduction of the finger within the vagina is unaccompanied with pain.

The rugæ, especially those at the vulvar end of the anterior vaginal wall, form the only irregularities on the vaginal surfaces.

*Temperature*—

Is slightly greater than that of the body.

*Secretion*—

There is no appreciable discharge beyond the catamenial. The walls of the vagina are moistened with an acid secretion—a mucus containing, especially in the upper part of the vagina, numerous scaly, epithelial cells.

### (*e*) Cervix

*Position*—

It is inserted into the anterior wall of the vagina at its upper extremity at an obtuse angle. This is to be carefully kept in view in the introduction of the speculum. The end of the cervix marks nearly the centre of the pelvic cavity.

*Direction*—

Normally the cervix is directed downwards and backwards in the axis of the brim.

*Length*—

The cervix is divided into a supra-vaginal and infra-vaginal portion. The infra-vaginal portion in nulliparæ is about three-quarters of an inch.

The anterior lip is usually said to be the longer, but this is only apparent, owing to its lower position in the vagina. Practically they are of equal length, the anterior being the thicker.

*Sensibility*—

The cervix is much less sensitive than the vaginal walls or the labia pudendi. The reason of this is, that though the cervix is richly enough supplied with nervous filaments, yet they in great part run to the sympathetic ganglia, and few are connected with the cerebro-spinal system. This is an important point to be held in recollection in various operations on the cervix, such as the use of the volsella, application of caustic, and cutting operations on it.

*Consistence*—

In virgins and nulliparæ it has a smooth, polished surface, and conveys to the touch a firm, elastic, somewhat cartilaginous feeling.

In multiparæ its surface is rougher and more irregular, while its substance is harder and more fibrous.

*Shape*—

In virgins and nulliparæ it hangs free into the vagina as a flattened cone. In multiparæ it is more flattened and notched, and considerably shorter.

### (*f*) Os uteri

*Shape*—

A small, circular, sometimes transverse, fissure in virgins and nulliparæ; to the touch imparting the

same feeling as the tip of the nose. It gapes slightly during menstruation. In multiparæ it is distinctly transverse and fissured.

*Edges—*

Smooth and regular in the former, irregularly notched in the latter.

*Patency—*

From a No. 8 to a No. 10 catheter in the former. In multiparæ its calibre is greater, but it varies very considerably.

### (*g*) Uterus

*Position—*

It lies between the bladder and rectum, inclined forward in the axis of the brim. The upper surface of

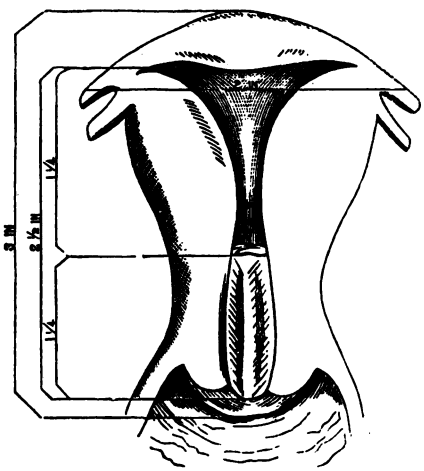
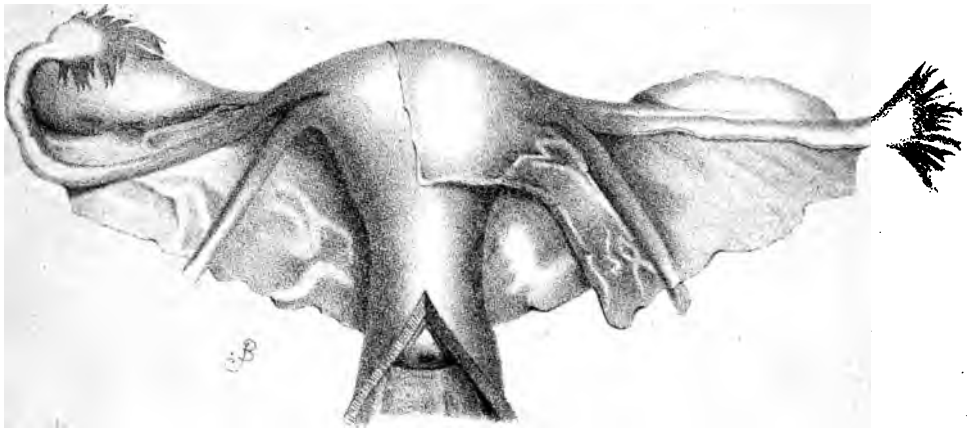



FIG. 2.—Transverse mesial section of Uterus showing measurements.



UTERUS AND ANNEXA - ANTERIOR VIEW.

its fundus is usually on a level with the plane of the brim, seldom higher, more frequently lower, and about three quarters of an inch in front of the sacrum. The normal uterus is somewhat anteverted.

*Length—*

In the nulliparous uterus from os externum to fundus (internally) is two and a half inches. In the multiparous uterus it is rather more.

*Breadth—*

Between the Fallopian tubes is somewhat above two inches, and where the body joins the neck, one inch.

*Shape—*

Is that of a flattened pear, its walls tapering gently and regularly from the fundus to the level of the os internum.

*Size—*

The student, keeping in view the shape and measurements given above, ought to make a careful bi-manual examination on a spare woman, or on the dead subject, in order to gain a correct idea of the size and feel of the nulliparous uterus.

It is very important that the student should have a distinct idea of the size and shape of the normal uterus as conveyed to the fingers bi-manually, as it is only in this way he is able to recognise slight enlargements, as in early pregnancy, or tumours.

Such knowledge can be easily gained on the dead subject.

There are few more important practical lessons in Gynecology than the performance of bi-manual examination on the cadaver. This I endeavour to carry out systematically by asking the student to examine bi-manually on the dead subject. I ask him first to

examine while the uterus is lying forward; then I place the uterus backwards, and make him recognise its absence. Then I place the uterus forward, and put a foreign body, such as a small ball, in the space of Douglas, and make him recognise both the foreign body and uterus.

*Mobility*—

The uterus is movable in all directions.

The amount of movement varies.

The body and fundus enjoy a much greater range of movement than the cervix, which is comparatively fixed to the bladder and vagina.

The movements are as follow :—

1st. A movement backwards and forwards, so that the organ can accommodate itself to the alternate emptying and filling of the bladder and rectum.

2nd. Lateral movements. These are restricted, owing to the broad ligament. The uterus is normally inclined somewhat towards the left.

3d. A movement upwards and downwards.

This can be well observed during inspiration and expiration, and during examination with the speculum, or when vomiting comes on during the operation for vesico-vaginal fistula. This movement is taken advantage of in the action of the Hodge pessary when properly applied. An exaggerated movement downwards is had recourse to when the cervix uteri is seized with the volsella and dragged down with the view either of exposing the os or bringing the uterus within range of manipulation.

*Axis*—

Is that of the inlet, *i.e.*, in a direct line from the umbilicus to the coccyx.

### (*h*) Ovaries

*Position*—

Below the brim of the pelvis, on the posterior fold of the broad ligaments, behind the Fallopian tubes. The left lies in front of the rectum, and the right in relation to a coil of small intestine. In health they can be felt only after very careful bi-manual examination, by pressing the vaginal fingers high up in the space of Douglas. Very often the healthy ovaries escape the touch of the most careful examiner.

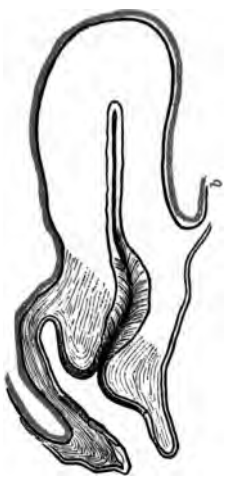



FIG. 3.—Antero-posterior mesial section of Uterus. Red line shows relation of Peritoneum.
*a*, Recto-uterine, or Pouch of Douglas. *b*, Vesico-uterine.

### (*i*) Space of Douglas

Is the retro-uterine or recto-vaginal sac of peritoneum, and plays a very important part from a pathological point of view. It is the most dependent part of the peritoneum.

*Position.*—The space of Douglas lies between the uterus and vagina in front and the rectum behind. It is felt and explored through the posterior fornix vaginæ, or per rectum.

*How formed*—

The peritoneum passing down the entire posterior surface of the uterus, and investing the upper third of the vagina, is reflected on to the anterior surface of

the rectum. The pouch so formed is the space of Douglas.

The anterior and posterior walls of the space of Douglas are in close apposition, so that it has only a potential existence. It varies in depth.

In health it is empty. It is said to contain folds of small intestine. This is, however, only the case when the uterus is anteverted. Being the deepest part of the peritoneum, loose bodies and fluids have a tendency to gravitate into it.

Barnes, following Sappey's division, divides the space into three compartments:—

1. Median, or retro-uterine.
2. Right retro-ovarian.
3. Left retro-ovarian.

He points out that the left compartment is fully an inch deeper than the right, owing probably to the course of the rectum. This accounts for the frequency with which bodies are found on the left side.

It is important to note that anteriorly the peritoneum only dips as far as the os uteri internum, and that the reflection of the peritoneum constitutes a much shallower pouch than the posterior. It is empty in health, but occasionally contains a loop of small intestine, and is to be felt and explored through the anterior fornix vaginæ, or through the bladder.

### (*j*) Broad Ligaments

Before leaving the peritoneum, it is necessary to draw the student's attention to the two double folds of it forming the broad ligaments. They stretch from the borders of the uterus to the sides of the pelvis.

They are attached to the sides of the uterus on a level with its anterior surface, the bulk of the organ being thus posterior to them. They separate at their bases to line the floor of the pelvis.

### (*k*) Parametrium or Cellular Tissue

Between the laminæ of the broad ligaments there is a considerable quantity of cellular tissue, continuous with that found on the sides of the vagina and rectum. This has an important practical bearing in relation to pelvic cellulitis and fluid collections in the pelvis. The cervix is surrounded or encapsuled as it were with cellular tissue. This tissue is abundant and firm between the cervix and posterior bladder walls, where it is known as the para-vesical cellular tissue. It is important in pelvic inflammation, and in cases of malignant disease of the cervix explains its ready transmission to the bladder. It is continuous with the cellular tissue between the broad ligament already referred to.

### Indications for a Vaginal Examination

Before describing the several steps in a vaginal examination, it is well to draw attention to the various conditions under which such procedure is demanded.

In married women there need be no difficulty in proposing a local examination, when the symptoms are such as to point to any derangements of the pelvic organs.

In unmarried women it has comparatively seldom to be undertaken, and only after the practitioner has satisfied himself that the symptoms depend on some local cause: for example, in menstrual disorders :—

1. *Amenorrhœa*; a local examination is very seldom indicated. The condition, like menorrhagia, is but a

symptom, and in the great majority of cases depends on general rather than local causes. No doubt in cases of atresia it is essential; but then the general symptoms will indicate to the practitioner the retention of the menstrual discharge. When the discharge has been suddenly arrested the case is different, and the possibility of pregnancy or ovarian disease will suggest itself. This occurrence always requires serious consideration. It must be left to the practitioner's good sense and feeling whether an examination should be undertaken. Careful inquiry should be first made as to the general condition, the presence of any tumour, the condition of the mammæ, etc., and then only after other methods have been exhausted and the symptoms carefully weighed, should vaginal touch be resorted to.

2. *Dysmenorrhœa* is not by any means a justification for a local examination under all circumstances. It is only when painful menstruation persists to such a degree as to impair the girl's health, and when it resists general treatment, or when it renders the patient unable for her ordinary duties, that a local examination should be made. Even then, unless the symptoms indicate that there is some obstruction to the flow, as in cases of stenosis of the os or acute flexion, not much benefit will accrue from a local examination.

3. *Menorrhagia* in girls generally depends on constitutional causes, and consequently usually requires constitutional treatment. If it persist in spite of constitutional treatment, and is so profuse as to injure the health, then a local examination becomes imperative.

4. *Metrorrhagia.*—Hemorrhages occurring irregularly between the periods, or continuing so as to render

the regular period indeterminate, are cases in which an examination should never be omitted.

Either menorrhagia or metrorrhagia in married women always demands a careful vaginal examination, and any practitioner who neglects to insist upon an examination under such circumstances fails to do his duty.

In women past the menopause, whether virgins or married, who have any hemorrhagic discharge, a vaginal examination should never be omitted.

### 2d. Method of making a Digital Examination per Vaginam.

Place the patient on her left side, on a couch or bed, with her legs well drawn up, her head and shoulders lying obliquely across the couch, on a level with her hips, and her nates pushed to the edge. Avoid allowing the patient to lie on her elbow, which she is very apt to do. She ought to lie quite on the side. The position of the operator ought to be behind the patient. Before making a vaginal examination the hands should be carefully washed with soap and water, and a nail brush freely used. There are two good reasons for the observance of this rule:—1st. It diminishes the risk of carrying infection from one patient to another; and 2d, it renders the sense of touch more delicate. The examination should be made lightly and gently. Rough handling and pushing will elicit but very little accurate information, and may do a great deal of harm. Clean fingers and a light touch are essential.

Two fingers, the first and second of the right hand, are to be covered with oil, grease, or pomade, and introduced between the patient's nates up to her perinæum.

The forefinger is then to be slipped over the fourchette into the ostium vaginæ, while the thumb is flexed on the palm. If the patient be a married woman, or a multipara, then both the first and second fingers should be introduced; if unmarried, or sensitive, only the forefinger. An examination with one finger is most unsatisfactory; two, therefore, should always be employed when practicable.

If the introduction of the finger into the vulva and ostium vaginæ causes pain, then a visual examination should be made, when some of the morbid conditions to be noted in a following chapter will probably be found.

If there is no pain, then the finger should be introduced onwards into the vagina, and the presence or absence of the hymen, or its remains (the so-called carunculæ myrtiformes) noted.

If no hymen is present, or if the woman is a multipara, then the palmar surface of both fingers should be slowly introduced, and the conditions of the perinæum noted: whether it has been lacerated, and to what extent; then the fingers should gently pass over the

**Vaginal Walls,**

first along the posterior, then along the lateral, and ultimately, by turning the palmar surface towards the pubes, along the anterior walls, and attention paid to—

1. The length of the walls.
2. The presence or absence of rugæ.
3. The capacity of the vagina: whether it is encroached on by any tumour in the walls, or by cicatrices or fistulæ, the results of

wounds during parturition, or by bands, the results of former inflammation.

4. The sensibility of the walls.
5. Any irregularities or projections on the surface of the walls.
6. Prolapse of either wall.
7. Tenderness or thickening in the neighbourhood of the urethra.
8. The temperature.
9. The amount, consistence, character, and colour of any secretion.

**The Cervix Uteri** ought next to be examined, noting—

1. Its position in the vagina, whether high or low.
2. Its direction, whether downwards, backwards, or forwards.
3. Its length.
4. Its consistence, whether hard or soft.
5. Its shape: if conical, or bent.
6. Its size.

**The Os Uteri,** noting—

1. Its shape.
2. Its edges.
3. Its patency.
4. Whether any body projects through it; if so, observe its nature.

If any doubt exists as to the condition of the cervix, an examination should be made with the speculum as described in a later chapter.

The finger should now be swept round the cervix,

along the **Vaginal Roof**, noting if any body, or swelling of any kind, is to be felt:—

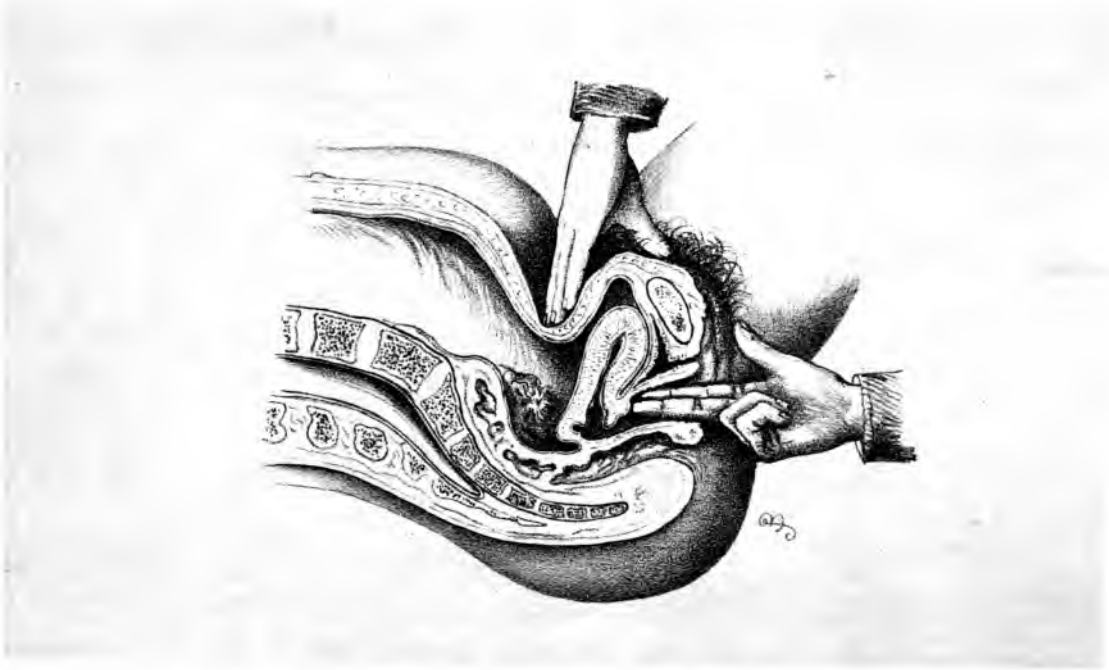
(*a*) Specially through the posterior fornix vaginæ in the pouch of Douglas.
(*b*) On either side of the cervix.
(*c*) In front of the cervix, either in the cellular tissue between the bladder and uterus, or in the utero-vesical pouch of the peritoneum.

An analysis and differential diagnosis of the various morbid swellings, usually met with in these pouches, will be found further on.

It must, however, be carefully kept in mind that no vaginal exploration is ever complete, or in any sense satisfactory, unless after the employment of the

## Bi-manual Method.

It is impossible to insist too strongly upon the importance of the student adopting this as routine in every gynecological examination. The earliest clinical lesson which the student ought to receive should be a demonstration of the bi-manual method of examination. Until he has learnt the value of this, he can make very little progress as an accurate observer of the diseases of women. The *object* of this method of examination is to gauge the size and relations of the entire pelvic contents between the two hands, two fingers of the right hand being in the vagina, and the fingers of the left hand being placed over the abdomen above the pubes. In no case ought it to be omitted. Except in those cases where the patient is very stout, or where the abdominal parietes are morbidly sensitive, this



BI-MANUAL METHOD OF EXAMINATION. UTERUS ANTEVERTED

method gives the examiner complete command of the organs in the pelvis, and, in the great majority of cases, supersedes the use of any diagnostic aids.

While the fingers of the right hand are still in the vagina, the patient should be asked to turn from her left side to her back, and, at the same time, the left hand well-warmed should be slipped under the patient's clothing until it is in contact with the abdominal wall in the hypogastric region, immediately above the pubes. The position of the left hand is of great importance. As usually represented it is just above the pubes. This is wrong. If the fingers of the left hand are placed immediately above the pubes they may miss the uterus altogether. They ought to be placed well up between umbilicus and pubes, so as to be sure of embracing the uterus thoroughly between them and the fingers of the internal hand. Care should be taken that none of the patient's underclothing intervenes between the examiner's hand and the abdominal wall. The examiner ought to be on the patient's right side.

The legs should be well flexed and drawn up, and the soles of the feet placed flat on the bed, and the patient told to breathe easily, specially to avoid holding-in her breath. Care should be taken that the bowel and bladder are empty.

The points of the fingers of the left hand should now be pressed deeply into the pelvis, and, at the same time, the two fingers, per vaginam, pressed upwards and forwards until the uterus can be distinctly felt and commanded between the two hands.

Three little manœuvres help to render this examination the more satisfactory. While the fingers of the

external hand are pressed *steadily* down into the pelvis, it is useful—

1st. To place the internal fingers on the cervix, and note the mobility of the uterus. Special attention should be paid very early in examination as to the mobility of the uterus, both as to whether it is connected to any neighbouring growth, or whether it is simply fixed, in the absence of any such body. If the want of mobility is due to any old standing inflammation, whether peritoneal or cellular, great care and caution must be exercised so as not, by rough handling, to induce a fresh attack.

2d. To place the internal fingers in front of the cervix, and to note whether the uterus lies forward, and if so, its size. This is most important in the diagnosis of early pregnancy.

3d. To place the internal fingers in the posterior fornix vaginæ, and to note the size, relations, etc., of any tumour, either of the uterus or its annexa, that may be felt through it.

Obviously, the employment of this method will prevent any pelvi-abdominal tumour, not to be felt per vaginam, being overlooked.

Of course in those comparatively rare cases where, from obesity, sensitiveness, or some peculiar obscurity in the case, the bi-manual method fails to clear up the condition of the pelvic organs, previous induction of anæsthesia will be found useful.

The combined recto-vaginal examination will be described when speaking of the rectum.

It will sometimes be found useful to examine the patient in the erect posture, as a means of deciding

accurately the existence and extent of the uterine descent.

While the patient still occupies the dorsal position, and if occasion requires, examination of the abdomen can now be practised.

## Examination of the Abdomen

*Position of Patient.*—The patient should be placed flat upon her back, with her legs well drawn up. This is important, in order to relax the abdominal muscles. Her dress and corset should be loose, and her lower extremities covered with a sheet or shawl.

### Methods of Examination

The methods of examination are—

Inspection, Palpation, Percussion, and Auscultation.

*Inspection—*

This will afford an opportunity of observing the following points:—

1. The size and shape.
2. The presence of striae gravidarum.
3. The condition of the umbilicus, whether prominent, flush, or retracted. The relative distance between the pubes or either iliac crest and the umbilicus.
4. Discoloration of the skin, especially the linea alba.
5. The contractions of the uterus.
6. The movements of the fœtus.
7. The condition of the abdomen during respiration, and the pulsations of the abdominal aorta.
8. Irregularities on the surface.

*Palpation—*

This will, if carefully carried out, yield most important information with regard to the nature of any abdominal or pelvi-abdominal tumour. The relation, consistence, and mobility can, in this way, be fully studied.

*Position of Patient.*—As already indicated.

*Method.*—Both hands, being well warmed, should be pressed lightly over the abdominal walls, and their temperature and tenderness should be observed carefully. While the patient is engaged in conversation, with the abdominal walls lax, the fingers, well spread out, should be pressed deeply down, so as make out the form and relation of any foreign body which may be present. In order to obtain the full value from palpation, the pressure must be at first light, and gradually increased. Any attempt to press the hands suddenly down will simply result in the muscles becoming tense, and no information will be gained whatever.

*Difficulty.*—When the patient is stout, very hysterical, or the abdominal walls tender.

The method of practising, as well as the great value of obstetrical palpation, both in diagnosis and treatment, does not fall to be discussed here.

*Percussion—*

In the diagnosis of tumours, and the presence of fluid, percussion elicits valuable information. In the ordinary condition of health, percussion gives a resonant note; but with either tumours or fluid, this is replaced by a dull one.

*Method.*—The middle finger of the left hand should be placed, at first lightly and afterwards firmly, against the abdominal wall, and, with a sharp even stroke, it

should be struck with the first and second finger of the right hand.

*Difficulty.*—Some women offer objections, but a very little explanation and persuasion will readily overcome this.

*Auscultation*—

The use of the stethescope gives important help in diagnosis. The stethescope, placed over the abdomen, may reveal:—

1. The fœtal heart.
2. The uterine souffle.
   (*a*) In pregnancy.
   (*b*) In fibroid tumours.
3. Crepitation, from the adhesion of various abdominal tumours.
4. Pulsation of the aorta.
5. Sounds due to the presence of gas in the intestinal canal.

The abdomen should be exposed free of any garment. This is important, especially amongst poorer women. Among the better classes, auscultation may sometimes be practised over a chemise of fine linen. There ought to be complete silence in the room. The examiner should place himself on the right and left of the patient alternately, so that both sides of the abdomen may be auscultated. The walls of the abdomen, as well as of the uterus, must be moderately depressed. Strong pressure will modify the sounds, especially the souffle.

Hyperaesthesia of the abdomen will often render auscultation difficult.

In diseases of the respiratory organs, pathological sounds are caused which render auscultation difficult.

3d. The more Common Pathological Conditions met with at the various steps of a Vaginal Examination.

## Vulva

*a.* If there is pain in attempting to introduce the finger into the vulva, then a visual examination ought to be made, which will probably reveal—

1. An abscess in one or other labium.
2. An urethral caruncule.
2. Vaginismus.
4. Inflammation, sores, abrasions.

*b.* Various tumours and malformations are to be met with, such as cysts, fatty and other tumours, condylomata, hypertrophy of the nymphæ, varicose condition of the veins. When such are detected with the finger, their exact nature should be ascertained by an ocular examination, which will further indicate the presence of pruritus or eczema vulvæ, or parasites.

*c.* Note if any body or swelling protrude through the ostium vaginæ, and if so, observe its shape, consistence, and especially its attachments, *e.g.* :—

(*a*) The anterior vaginal wall, as in cystocele.
(*b*) The cervix uteri in procidentia.
(*c*) The posterior vaginal wall, as in rectocele.
(*d*) Various uterine and vaginal neoplasms.
(*e*) The fundus uteri in inversion.

## Hymen

1. If imperforate.
2. Its persistence in the married woman.
3. Painful fissures.

4. If imperforate and bulging; retained menstrual discharge.

## Vaginal Walls

*Length*—

(*a*) Increased in cases of ascent of the uterus, as in some ovarian and other tumours.

(*b*) Shortened as in

Cystocele.
Prolapsus uteri.
Rectocele.
Cicatricial bands closing the vagina.
Anteversion and retroversion.

Various serous, sanguinolent, and purulent collections, in front or behind the uterus.

*Capacity*—

Is encroached on by the distension of the rectum, as well as by any tumour in the walls, or any of the conditions just alluded to, which shorten the vagina.

Sensibility and temperature are notably increased in various degrees of inflammation.

*Vaginal Discharges*—

(*a*) Leucorrhœa, or ordinary white discharge.
Investigate whether vulvar, vaginal, or uterine.

(*b*) Clear and albuminous, like white of egg, denoting inflammation of the uterine body or cervix, while vaginal leucorrhœa is usually acid both in reaction and odour, purulent or creamy, that from the cervix is opalescent, glairy, tenacious, and often streaked with blood, is alkaline in reaction, and odourless.

(*c*) Watery.

If so, some fibroid or cancerous disease is indicated.

(*d*) Offensive.

Suggests cancer—some clot or membrane, or any body, such as a plug, long retained in the vagina or uterus.

(*e*) Bloody, or so-called metrorrhagia.

Other than catamenial suggests fibroids, polypi, cancer, endometritis, erosions of the cervix, etc.

## Cervix

*Position*—

If lower in the vagina than normal, it indicates—

Prolapsus, Hypertrophic elongation.

*Direction*—

If directly downwards, indicates Prolapsus.

If directly forwards, indicates Retroversion.

If directly backwards, indicates Anteversion.

The amount of displacement of the cervix forwards or backwards will depend on the degree of retroversion or anteversion, whether it be complete or partial, as in the accompanying diagrams.

FIG. 4.

Anteversion DEGREES OF Retroversion

*Length*—

Shortens in the following conditions:—

(*a*) Advancing age.
(*b*) Number of pregnancies.
(*c*) Immediately before and
(*d*) During labour.
(*e*) Surrounded by parametric exudation.
(*f*) Super-involution.
(*g*) Apparent shortening in pregnancy.
(*h*) Non-development.

Increases, as in prolapsus, hypertrophic elongation, in some cases of sterility, hyperplasia in sub-involution.

*Consistence*—

Hard, as in

Inflammation.
Cancer.
Senile atrophy.
Fibroid degeneration.

Soft, as in pregnancy, and in some cases of sub-involution.

*Shape*—

Conical, as in some cases of sterility.
Bent, as in some cases of flexion.
Thick and œdematous, as in chronic inflammation.
Small and cartilaginous, as in virgins.
Irregular and notched, as in multiparæ.

## Os Uteri

*Shape*—

Circular, as in virgins and nulliparæ.
Transverse or irregularly notched, as in multiparæ.

*Edges*—

Smooth, regular, and even in health, but everted, granular, denuded of epithelium, and rough, ulcerated, ragged, or thick and pouting, as in various degrees of simple or syphilitic inflammation, and malignant disease.

*Patency*—

Varies from admitting a small probe with difficulty, as in some cases of stenosis of the os uteri externum, to be large enough to admit the forefinger, as in some cases of sub-involution.

It *gapes*—

(*a*) During menstruation.
(*b*) After labour or abortion.
(*c*) In erosions with a split cervix.
(*d*) In sub-involution.
(*e*) In ulceration, cancer, etc.

The bodies which, apart from labour, may be found protruding through the os uteri are :—

1. A mucous polypus.
2. Fibrous polypus.
3. Any part of the ovum in abortion.
4. A blood clot.
5. Inverted fundus uteri.

The various morbid conditions which are to be felt through the posterior fornix vaginæ in the space of Douglas are both numerous and important. It is necessary to enumerate only the most frequent.

1st. Fæcal accumulations in the rectum, recognised by their position, consistence, and pitting on pressure.

2d. An enlarged or prolapsed ovary, recognised by tenderness and pain on pressure, its size, shape, and position, as well as from its being unconnected with the uterus. The prolapsed ovary will generally be found under the retroverted uterus. If the ovary be at all enlarged, the pain is exquisite; even if normal in size, the pain, even on light pressure, is well marked. Two fingers are always required.

3d. A retroflexed or retroverted uterus, recognised by a careful bi-manual examination, which will show the absence of the uterus in its proper position in front. A careful bi-manual will give the most satisfactory information; but if further corroboration is required, the sound may be used with proper precaution.

4th. Effusions, the result of pelvic inflammation, recognised by the fixation of the uterus, the hardness of the swelling, and the ordinary history of pelvic inflammation. If recent, the fingers will recognise a hard unyielding flat surface stretched across the roof of the vagina.

Is it perimetric or parametric?

*If perimetric—*

1. The mass will be high placed.
2. Will occupy inlet of pelvis.
3. Portio vaginalis projects free.
4. Uterus is surrounded by a hard mass.
5. The mass spreads to abdomen, and
6. Is accompanied by vomiting.

*If parametric—*

1. The mass tends to descend, and will be found low down.
2. Keeps close to pelvic walls.
3. Is below cervix, and by filling up space round it, shortens portio vaginalis.
4. Is localised—
   (*a*) In front.
   (*b*) Behind.
   (*c*) On either side.
   (*d*) Between the layers of broad ligament.
5. Is not accompanied by vomiting.

5th. Hæmatocele. It is often difficult to distinguish it from the cellulitis which frequently accompanies it. The history of the case will, as a rule, afford the necessary means of diagnosis: its suddenness; its occurrence at or near a menstrual period, accompanied by prostration or collapse. The blood accumulates in the space of Douglas, and gravitates into the lowest compartment of it. It assumes the shape of the cavity, and between the tumour and the uterus there is generally a well-marked depression.

6th. Fibroid tumour, recognised by its connection with the uterus, and enlargement and irregularity of the latter; possibly menorrhagia and metrorrhagia.

7th. Cysts, in the ovary or broad ligament, recognised by their position, consistence, and shape.

They are not painful on pressure, and do not prolapse like an enlarged ovary. An examination per rectum will generally reveal their true character.

8th. Abscess, recognised by history and fluctuation.

9th. Gravitation of ascitic fluid, recognised by history and presence of fluid in abdomen.

10th. Extra-uterine fœtation, hernia, and other less common conditions, recognised by their special symptoms.

In front of the cervix the following swellings may be found:—

1st. An anteflexed or anteverted fundus uteri, recognised bi-manually and by the sound.

2d. Effusions from pelvic inflammation or hæmatocele, recognised by the history, shape, and consistence of the swelling.

3d. A fibroid in the anterior wall of the uterus, recognised by the size of the uterus, the consistence of the tumour, and its connection with the uterus, along with a history of disordered menstruation.

4th. An abscess, recognised by fluctuation.

5th. Rarely an ovary, recognised by its shape and peculiar sickening pain on pressure.

For a complete knowledge of any of the swellings just named, behind, in front, or to the side of the uterus, a careful bi-manual examination is absolutely essential.

## Ovaries

They are subject to various alterations—

1. They rise with pregnancy.
2. They occupy, after delivery, the iliac fossae, where they may remain fixed by adhesions.

They are liable to four dislocations :—

1. Retro-lateral. They may become prolapsed down into the base of either the right or left compartment of the space of Douglas. Either of them leads to—
2. Retro-uterine.
3. Ante-uterine, into the para-vesical pouch.
4. Into the infundibulum of an inverted uterus.

## Uterus

When the body of the uterus and the ovaries come to be concerned, the bi-manual is the only satisfactory method of diagnosis, and it must be carefully and thoroughly carried out.

1. Enlargement of the uterus, as in early pregnancy, fibroids, etc. Early pregnancy will be recognised by—
   - (*a*) Enlargement of uterus, corresponding to length of time since cessation of menses.
   - (*b*) Softness of body and cervix.
   - (*c*) No pain on pressure.
   - (*d*) Uterus anteverted.
   - (*e*) Uterine body flattened out.
   - (*f*) Uterus even and movable.

2. Diminution or absence.
3. Displacements, as in the versions and flexions.
4. Fixation, as in pelvic effusions, pelvic adhesions, large masses of fibroid or other tumours, cancer.
5. The relation of tumours to the uterus.
6. Displacement and enlargement of the ovaries.

## CHAPTER II.

### *THE RECTUM*

THE student and junior practitioner are apt to overlook the important part that a Rectal Examination plays as an aid in gynecological diagnosis and treatment.

Frequently enough, fissure of the rectum, and fibroid, or malignant stricture have been overlooked from want of a digital examination per rectum. The student should keep in view the help to be derived from a careful rectal examination in difficult uterine cases; because by it the whole posterior wall of the uterus, the condition of the ovaries, and the extent of a cellulitis can be carefully mapped out.

The following are the more common methods:—

1. In cases where the hymen is intact, and where it is inexpedient to place the patient under chloroform, and rupture it, an examination with one finger per rectum is an excellent substitute. It is equally useful in those cases where the vagina is occluded by inflammatory bands or cicatrices.

2. To evert the rectum, place the patient on the left side and introduce one or two fingers into the vagina. Press the finger or fingers downwards and backwards over the sphincter ani. At the same time cause the

patient to bear down. In this way the rectum can be turned out through its sphincter, like the finger of a glove, and the anterior wall examined carefully.

The presence of fissures can thus be made out distinctly, as well as the number and extent of internal hæmorrhoids, warts, chancres, and polypi.

Sometimes the anal sphincter is very irritable, and contracts spasmodically when touched. In such cases it can be forcibly stretched with the thumbs. A few fibres of the sphincter may be ruptured without causing any permanent injury. The condition of the rectal mucous membrane should be carefully examined at once, as from pressure it soon becomes swollen and congested, and the view is obscured.

3. The double touch of the rectum and vagina is very serviceable for the careful recognition of the various swellings already alluded to, which may occupy the space of Douglas.

There are two simple methods of accomplishing this:—

(*a*) Introduce the index finger into the vagina, and the thumb of the same hand into the rectum; or

(*b*) Introduce the index finger into the vagina, and the second finger into the rectum.

Although in the employment of the first of these methods, the shortness of the thumb is a drawback, yet I incline, probably from custom, to recommend it as perhaps the more serviceable.

It is always well to fill with soap the space beneath the nail of the finger to be introduced into the rectum.

4. In cases where it is found impossible, from the stoutness of the patient or some other reason, to come to a definite conclusion by the bi-manual method, the following manœuvre is worthy of trial:—

Seize the cervix uteri with a volsella, and drag it down, either with or without the aid of an assistant. One or two fingers are then to be introduced into the rectum and the posterior wall of the uterus, or any tumour in relation to it thus explored.

5. The method proposed by Simon, in 1872, of artificial dilatation of the anus and rectum by the gradual introduction of the entire hand for exploration, hardly comes under our consideration.

Although I am unable, from personal experience, to recommend the method, yet it may be as well to mention Simon's plan.

The patient being fully anæsthetised, at first two, then three or four fingers are slowly insinuated within the anus, until the whole hand and, if necessary, the forearm is introduced. It is claimed for the operation that, with a moderately-sized hand, and with due care and caution in its introduction, no harm can result, except some tearing of the sphincter ani and some temporary incontinence of fæces. The whole abdominal region, as far as the umbilicus and kidney, can be examined in this way.

As I do not consider the operation one to be undertaken except under very exceptional circumstances, I do not enter into details, but perhaps the record of this method will impress on the student the ease and practicability of a complete examination of the rectum with the fingers.

6. The recto-abdominal touch in difficult cases is worthy of employment.

One or two fingers, or, if need be, the entire hand can be introduced into the rectum, and with the other hand over the hypogastrium, a combined examination can then be made.

It is necessary before leaving the consideration of the rectum, to draw attention to the importance of ensuring a thorough evacuation of the lower gut before undertaking any complete examination of the pelvic organs. It is impossible to make a satisfactory vaginal examination while the rectum is loaded.

## CHAPTER III.

### *EXAMINATION OF THE BLADDER*

THERE are three methods of examining the female bladder:—

1. Bi-manually.
2. With the vesical sound.
3. With the finger after dilatation.
4. Inspection.

**1st. Bi-manually.**

Owing to the disposition of the female bladder, it can readily be examined bi-manually. With one or two fingers in the vagina, the base of the bladder can be carefully examined. A large stone can readily be felt, and its outline made out through the anterior vaginal wall; and if the bi-manual method of manipulation be carefully carried out, even the smallest stone will be detected. The shortness of the urethra, the absence of the prostatic gland, and the ease with which the elastic floor and fundus of the bladder can be lifted up and manipulated, render the diagnosis of stone much easier and more certain than in the male.

Again, the finger in the vagina will detect any unusual tenderness or thickening of the base or neck of the bladder or of the urethra, such as is met with in acute or chronic cystitis, fissure, or ulceration. The empty or

moderately filled bladder does not impart to the fingers examining bi-manually a distinct defined outline, such as some diagrammatic sections of the pelvis would suggest. It is only when the bladder is moderately filled that its outline can in this way be ascertained. When making an ordinary bi-manual examination this is to be kept in view.

### 2d. With the vesical sound.

When, after vaginal examination, the bladder or urethra is found tender, and vesical trouble is complained of by the patient, then this procedure is indicated. Conducted with ordinary care it is perfectly harmless, so that it can scarcely ever be said to be contra-indicated. An ordinary uterine probe or a male catheter or bougie, whether metallic or gum elastic, will serve the purpose perfectly well. It is introduced in the ordinary way, as described under the section on the CATHETER.

In sounding the bladder, note, Firstly—

*Tenderness.* The introduction of the sound into the bladder of a healthy woman gives absolutely no pain. A healthy bladder can be explored carefully without causing any discomfort to the patient, or indeed without her being aware of it. Occasionally with the vesical sound a little discomfort is experienced as the instrument passes the neck of the bladder. Between absolute immunity from pain and the greatest agony there are many varying degrees of suffering. The point is to note the presence or absence of pain, and, if present, its degree. In cystitis, for example, the pain is very great. When pain is elicited by the sound in the

bladder, the exact site of the pain can often be localised by pressing the finger in the vagina against the sound. Observe, Secondly—

*The consistence of its walls; if hard or soft.* As has been already mentioned, the empty bladder has but little defined shape. Its walls are soft, and will permit of the sound being pushed against them, and they do not resist the advance of the instrument. The walls yield painlessly before the sound. When the bladder is inflamed or diseased the walls become hard, and at once resist the push of the sound. Observe, Thirdly—

*The size of the bladder.* It makes no difference whether the patient has recently passed water. If the catheter enter easily, and if it enter five inches, measuring from the meatus, it is safe to judge that the bladder is normal in size. In diseases, as, for example, cystitis, the sound will often pass in but four inches, occasionally two, sometimes not at all. Observe, Fourthly—

*If bleeding follow the use of the sound.* This ought never to be the case in health. If it is present, the point of the sound will probably have abraded an inflamed surface either in the urethra or bladder, or have torn a vascular growth or a fissure.

**3d. Dilatation** of the urethra and subsequent examination of the bladder with the finger, falls to be more conveniently described later on.

### 4th. Inspection.

Sometimes it is necessary to inspect the mucous membrane of the urethra. Any ordinary pair of forceps will readily enough expose the anterior portion

of the canal. With a view of bringing the posterior half of the tube within the range of vision, various specula have been devised, such as those of Barnes. By means of a small tubular speculum, such as that of Stein, pushed into the bladder, each successive portion of the viscus can be examined. Visual examination of the bladder or of the distal end of the urethra is seldom indicated, and even when undertaken is unsatisfactory.

## CHAPTER IV.

### *THE SPECULUM*

THE speculum may be used either for diagnosis or for treatment.

A visual examination of the vagina or cervix is not by any means to be undertaken as routine in the examination of a patient. It is only when the examining finger recognises some abnormal condition of the cervix, such as laceration, abrasion, ulceration, etc., or of the vagina, that the use of this instrument is indicated for diagnostic purposes, or as a therapeutic agent it may be required when some application is to be made to the os, or cavum uteri, or when any operation is to be performed on the cervix or in the vagina.

CONTRA-INDICATIONS:—

1. Atresia vaginæ.
2. Presence of the hymen.
3. Acute inflammation.
4. When the parts are very sensitive.
5. Should be used as seldom as possible in malignant disease.

Of the numerous varieties of Specula, there are three kinds which are specially useful, and one or other of which meets all requirements :—

1. The Tubular, Cylindrical, or Fergusson.
2. The Bi-valve, or Cusco.
3. The Duckbill, or Sims.

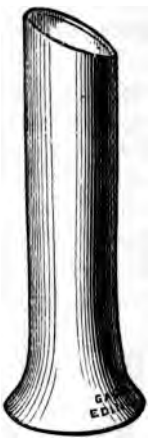


FIG. 5.—Fergusson's Speculum.

### Tubular

1. The Tubular is a glass funnel, of varying calibre, covered with quick-silver, and externally with vulcanite. There are three sizes; each fits within the other, and the set can thus be carried with ease.

For examining the condition of the cervix, and making ordinary applications to the os, this is by far the most useful form of speculum. It is easy to introduce and requires no assistant.

*Method of Employment—*

Make a careful per vaginam examination, and note the exact position of the cervix uteri. This should be scrupulously attended to, as it renders the exposure of the os with the speculum much easier.

Place the patient on the left side, with the buttocks well to the edge of the couch. The couch ought to be hard, and without a pillow.

With the forefinger and thumb of the left hand, separate the labia.

Oil the speculum, and grasp it in the right hand, placing the forefinger on the shorter side.

Introduce the longer end between the labia, and then rotate the speculum until the point of its longer end is in contact with the posterior wall of the vagina.

Push the speculum onwards in the axis of the vagina, and take especial care to keep the longer side in constant relation with its posterior wall. When the distal end of the speculum has reached the vaginal roof, depress it and then push it gently forwards, until the cervix is seen projecting into it. Note that the longer end of the speculum should always be behind the cervix. Any mistake on this point can usually be avoided by observing whether the maker's name is on the longer or shorter side. Avoid the common mistake of passing the speculum too far forwards.

FIG. 6.—Cusco's Speculum.

Attention is to be paid to the amount of discharge, and its character The os should then be wiped clean with a piece of cotton on a pair of uterine polypus forceps.

### Cusco, or Bi-valve

2. The Cusco or Bi-valve is not, as a rule, a a satisfactory form of speculum. It takes advantage of the anatomical fact that the ostium vaginæ is the narrowest part of the

vaginal canal. In cases, therefore, where the vagina is narrow, or much inflamed, this speculum can be more readily introduced than the tubular, and when once introduced, the blades can be made to expand in the widest portion of the canal and so embrace the cervix. The view is materially interrupted, however, by the lateral walls of the vagina, which are apt to fall between the blades. If the choice lies between a Cusco and a small Fergusson, the Cusco is preferable, as a small sized Fergusson is adjusted with difficulty, and shows but little of the cervix.

Both the tubular and Cusco specula stretch the cervix, cause pressure on it, and congest it. Their sphere of usefulness is limited to the simplest examinations and applications.

## Duckbill, or Sims'

3. The Duckbill, as in the accompanying diagram, is an invaluable addition to the gynecologist's armamentarium. This instrument, when properly used, not only gives the most satisfactory views of the cervix, but also of the greater portion of the vagina as well.

FIG. 7.—Sims' Speculum.

The great faults in the ordinary Sims' speculum are—1. That its blades are too long; 2. That they are too narrow; and 3. That the edges are too much incurved. The best form of Sims' speculum is one with the blade short, broad, and straight edged.

It is not at all times easy to expose the cervix with this speculum, but this difficulty does not depend so much on the introduction of the speculum, as on the position of the patient. The student should early accustom himself to the use of this instrument.

*Position of the Patient—*

She ought to lie on her left side—her dress being very loose—obliquely across the couch. Her hips should be near the edge of the couch. Her left arm must be drawn from underneath her, and allowed to hang over the side of the couch nearest the operator. Both legs must be flexed, but the right one must be drawn up until the knee is in contact with the couch. The patient then will be semiprone. The position of the face must be carefully attended to. The head must be placed on a lower level than the buttocks. In this way advantage is taken of the fact, that when the patient assumes the genupectoral position, the vagina naturally expands by atmospheric pressure and the action of gravity.*

There is no need for exposing the patient in this or indeed in any form of speculum examination. A sheet should be lightly thrown over her, and a folded towel placed beneath, so as to protect her dress.

When any part of the vagina, beyond the mere cervix itself, is to be examined, this form will be found the most serviceable.

Several disadvantages have been urged against this instrument, such as that—

* I have considered it necessary to show the details of the position with the nude figure. With the draped figure it is impossible to demonstrate the position with exactitude.

1. An assistant is required. Any nurse or intelligent person will do quite well. No doubt an assistant renders the investigation more complete, and when a very thorough examination is required such help is indispensable. For short examination, and with a little practice, however, it is easy enough, without the aid of a second person, to introduce the speculum, and expose the cervix, roof, and anterior wall of vagina, if only care be had to push the anterior wall out of the way with a spatula or the finger.

2. It forcibly draws back the perinæum. If properly introduced and used, this is not done to any great extent. Of course a certain amount of traction is indispensable.

3. The anterior wall of the vagina intercepts the view. This really is no very valid objection, as the anterior wall can be kept out of the way.

*Introduction of Speculum—*

The patient should be placed, as already described, on her left side, with her hips well flexed, and lying somewhat on her face. Either with the forefinger and thumb of the left hand, or by the hand of an assistant or nurse, the right labium should be drawn up. The speculum, warmed and oiled, should be grasped between the index finger and thumb of the right hand, and brought to the orifice of the vagina. The rounded point of the speculum should now be brought in contact with the posterior wall of the vagina, and kept in close contact with it throughout. It is in the neglect of this simple rule that all the difficulty and trouble arises with a Sims' speculum.

After the point of the speculum has reached the posterior fornix vaginæ, the speculum should be given to an assistant to hold, special care being taken to keep the point of the instrument in close contact with the posterior wall of the vagina. The tendency is to drag on the perinæum, but this only tilts the distal end of

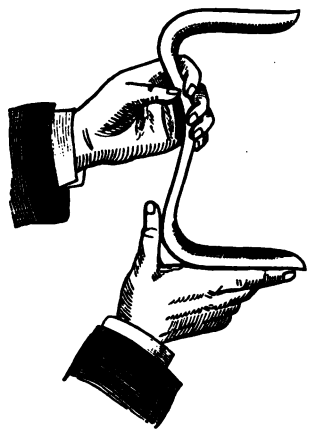


FIG. 8.—Position of the hands in the introduction of Sims' Speculum

the speculum further forwards, and interrupts the view. The pressure should be made on the oblique point, *not* on the *curve* at the *handle*. Traction is not to be made in a line with the coccyx, but to the right of it, obliquely across the right buttock. The right hand must now be employed to depress the anterior wall of the vagina. This can be done where the cervix is low, and the

vagina capacious, with the two forefingers, or in other cases with a spatula.

Where an assistant is present, it is best, whilst he holds the speculum steady, to push the anterior wall of the vagina out of the way, and at the same time to drag down the cervix, so as to get an accurate view of the parts. If the cervix is not exposed at once, or if it slip out of the way, it can easily be drawn into position by a tenaculum.

There is no limit to the various forms of specula which have been devised, each strongly recommended by the inventor. I feel sure that with a set of cylindrical specula and a properly made Sims', the practitioner is sufficiently equipped for diagnosis and treatment, so far as concerns specula.

## CHAPTER V.

## *THE SOUND*

### Its Nature

A PROBE, made of soft, flexible metal, with an olive-shaped point, and a knob two and a half inches from the end, marking the normal length of the uterus. The handle ought to be rough on the side corresponding to the concavity of the sound, and smooth on that corresponding to its convexity. Various forms of sound are in use, but none answer the purpose better than the ordinary Simpson sound, as modified by A. R. Simpson.

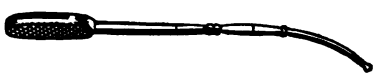


FIG. 9.—A. R. Simpson's Sound.

CONTRA-INDICATIONS—

1. If there is the least probability of pregnancy; if the patient has passed a few weeks, or even days, beyond her ordinary period for menstruating, the sound ought not, on any account, to be employed. Nor,

2. In cases of malignant disease of the cervix or body of the uterus,

3. In cases of acute inflammation of the uterus or its annexa.

4. The greatest care should always be taken in the use of the sound in cases where there has been any cellulitis, as a fresh attack is very apt to be set up.

5. Nor during menstruation. And,

6. Under no circumstance, unless a careful bi-manual examination has been previously made.

## Information to be gained by the Use of the Sound

1. The permeability of the cervical canal.

   The canal usually admits the probe easily enough.

   But its calibre is *diminished* in—

   (*a*) Cases where the cervix is congenitally small, or

   (*b*) Blocking by mucous polypi.

   (*c*) Stenosis of the os externum.

   (*d*) Stenosis of the os internum, as in cases of acute anteflexion.

2. The exact determination of the size of the uterus.

   The normal size of the uterus from the os externum to the fundus is two and a half inches.

   Its size will be found *increased* in

   Polypi,
   Fibroids,
   Sub-involution,
   Endometritis,
   Pregnancy,
   After labour or abortion;

   and *diminished* in

   Super-involution,
   Non-development,
   Senile atrophy.

3. The direction and shape of the uterus.

Normally it is inclined forwards; but *backwards* in

Retroflexion,
Retroversion;

and abnormally *forwards* in

Anteflexion,
Anteversion;

to *one or other side* in

Lateriflexions, or Versions;

and *downwards* in

Various degrees of Prolapsus.

4. The relation which any tumour bears to the uterus. For example, a tumour is found in the space of Douglas; if, on the introduction of the sound, and after turning it forwards, it disappears, then the diagnosis is a retroflexed or retroverted uterus.

5. The mobility of the uterus and of any tumour in its neighbourhood.

In health, the uterus is freely movable without pain.

It is *fixed*, as in the diseases already mentioned.

6. The introduction of the sound in ordinary circumstances should be unaccompanied by any hæmorrhage. If the sound or finger be covered with blood, then probably some degree of inflammation or congestion of the uterine body or cervix, or polypi, fibroids, or cancer will be present.

*POSITION OF THE FINGERS* PREVIOUS TO THE INTRODUCTION OF THE SOUND.

## Method of Employment

Placing the patient on the left side with the legs well drawn up, make a careful vaginal, combined with a bimanual, examination, and note the direction of the cervix. On the Continent and in America the patient is placed on the back, but it is best to get accustomed to one position, and the left lateral position is by far the most convenient for the great majority of manipulations. The sound should then be bent to an angle corresponding with the lie of the uterus.

Two fingers of the right hand are to be introduced up to the cervix, and the tips placed flush with the anterior lip, the palmar surface of the fingers being directed to the sacrum, and the dorsal aspect to the pubes, as in the accompanying plate.

The sound is then to be grasped in the left hand, and its point introduced along the cleft between the index and middle finger, until it reaches the os. The concavity of the sound is to be directed to the concavity of the sacrum, then—

1. If the os look downwards and forwards, the sound, with its concavity still directed backwards, is to be gently pushed onwards.

2. If the os look in its normal direction—viz., downwards and backwards—then the point of the sound, after being introduced about half an inch, is to be turned forwards, so that the concavity of the sound looks forward.

Care should be taken not to use force in attempts at introduction. The point of the sound should rather be coaxed and insinuated onward than pushed.

While the sound is still *in utero*, it is sometimes useful to make a bi-manual examination. This should, however, be done with great care.

To ascertain the exact size of the uterus, the forefinger should be fixed at the point corresponding to the os externum. While the finger is still retained at this point of the sound, both are withdrawn simultaneously, and the distance between the forefinger and the point of the sound noted.

Some difficulties are likely to be met with:—

1. Students sometimes experience difficulty in introducing the probe into the os externum. When the os is very small this is sometimes a real difficulty; but in the great majority of cases, by simply keeping the finger pressed against the anterior lip of the os, and allowing the point of the sound to slip off the tip of the finger, the difficulty is overcome.

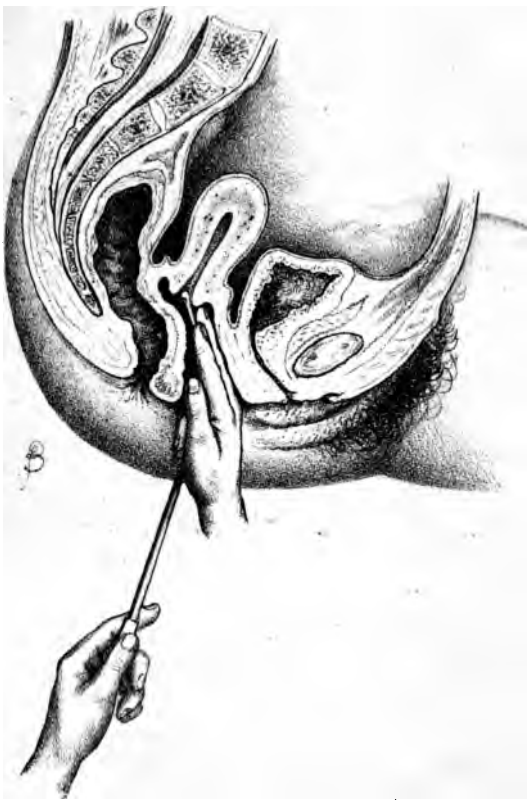
If, however, the os be very small, and the operator fail to introduce the probe, then a speculum—Sims'—should be introduced, and the os uteri exposed, and, if necessary, held by a volsella while the sound is introduced. In many cases of acute flexion the use of the volsella will greatly facilitate this.

It will probably be found that the os is so contracted that it is necessary to use a smaller-sized probe.

2. Occasionally the point of the sound is caught in some of the mucous folds in the cervix. This is easily overcome by a little gentle manipulation.

3. The greatest difficulty, however, is usually met with at the os internum in cases where there is anteflexion or retroflexion, more especially the former.

By introducing the two examining fingers in front of



INTRODUCTION OF THE SOUND.

SOUND IN UTERO.

or behind the cervix, according to the direction of the flexion, and pushing up the body of the uterus, and at the same time steadily but gently pushing in the sound, this difficulty is overcome.

It should be noted that, as in many cases the con traction at the os internum is very pronounced, the difficulty in passing the sound is considerable, sometimes insuperable; therefore it is better, after a fair trial, to desist, than by repeated efforts at the same sitting to stir up some pelvic inflammation. Rather make the patient return in a day or two.

## Use of Sound as a Uterine Replacer

IN ADDITION TO ITS VALUE IN DIAGNOSIS, THE SOUND IS OF IMPORTANCE AS A THERAPEUTIC AGENT IN REPLACING THE UTERUS IN VARIOUS DISPLACEMENTS.

In cases of retroversion and retroflexion of the non-gravid uterus, where the organ is not bound down by adhesions, the uterus should be restored to its normal position—1st, as a means of verifying the diagnosis; 2d, as a preliminary measure to the introduction of a pessary.

In cases of anteversion, previous to the introduction of a pessary, it is desirable, if there are no adhesions, to throw the uterus into retroversion.

## The Manœuvre

The sound is to be carefully introduced, in the manner already described (page 53), along the cervix to the fundus uteri.

The instrument should then be gently turned until

—in retroversion, for example—the rough part of the handle is directed forwards.

The student must particularly note that the whole movement of rotation is to be made by a sweep of the *handle*, the uterine curve of the sound rotating on its axis in the smallest possible circle. It is bad practice simply to turn the handle, and thus cause the *point* of the sound to make the greater sweep.

The operation should be done with great care, and without employing any force whatever.

In this way the displaced organ will be temporarily restored to its natural position, and so long as the sound remains *in situ*, the uterus will continue thus. Immediately in marked cases, and after a short interval in others, the uterus will return to its abnormal position. To ensure its retention, some form of pessary must be used. This will be found described later on.

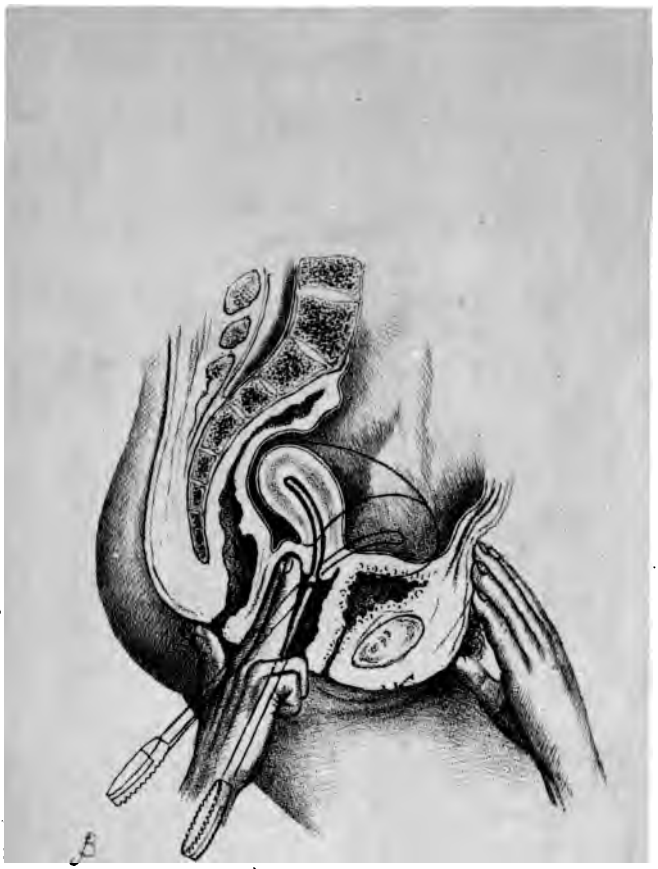
### Dangers

1. Perimetritis and ovaritis have been mentioned, but with ordinary care, they are very unlikely to occur. It should be remembered, however, that in some women the uterus is very irritable, so that the passing of even a probe, with every care and precaution, sets up an ovaritis.

2. Perforation of the fundus uteri by the sound. This has happened repeatedly. Fortunately, it is not generally followed by bad results. It is apt to occur when the fundus has become softened by disease, or during the process of involution after abortion.

3. Abortion is likely to occur only through the operator neglecting to inquire as to the patient's menstruation or omitting a bi-manual examination.

4. Inducing hæmorrhage.



REPLACEMENT OF THE UTERUS BY THE SOUND

## CHAPTER VI.

### *THE VOLSELLA AND TENACULUM*

THE volsella (Fig. 11) is constructed like a pair of ordinary vaginal dressing forceps, but the blades terminate in *two* or *three* curved hooks, which, when closed, interlock. The blades may be either curved or straight, and of various lengths, according to the purpose for which they are to be employed. They should lock by some simple form of catch, that shown in the figure being one of the most convenient. A tenaculum (Fig. 10), as shown in the woodcut, will often do equally well, and in any case is a most useful instrument for many gynecological operations.

FIG. 10.—Tenaculum.

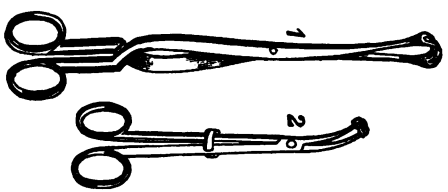



FIG. 11.—Two varieties of Volsellæ.

*Uses—*

1. To render easy a visual examination of the cervix and vaginal roof.

2. To aid the introduction of the sound, sponge-tents, etc., into flexed and verted uteri.

3. To permit of the easy exploration of the uterine cavity by the finger when dilated by tents, or after abortion, etc.

4. To permit of the examination of the fundus and back wall of uterus per rectum.

5. For the removal of fibroids, etc., from the uterine cavity.

6. To retain the cervix in a convenient position for the performance of operations, such as Emmet's for split cervix, etc.

*Mode of Employment—*

The patient being in a suitable position—on the back or left side—the instrument, held in the left hand, is guided on the tips of the fingers of the right up to the cervix, and while the vaginal walls and roof are carefully pushed aside, the blades are opened and one of the lips—usually the anterior—is caught. The hold should be sufficiently deep to prevent the possibility of the instrument slipping when traction is made. The patient is now directed to bear down, and by firm and steady traction in the axis of the pelvis the cervix may be brought down to the ostium vaginæ, and thus a visual or digital examination is rendered easy.

If the cervix has been dilated with tents, the fingers can be easily introduced, and the condition of the cavity and presence of tumours determined.

When the aid of this instrument is sought for the

temporary correction of displacements, as in facilitating the introduction of the sound or tents, etc., the following rule should be adopted in selecting the lip to be grasped:—"In flexions, seize the lip whose name corresponds with that of the displacement; in versions take the opposite one."

*Contra-indications—*

Such instruments must not be employed—

1. In pregnancy.
2. During menstruation.
3. In acute inflammatory states of the uterus or annexa.
4. In malignant disease of the cervix.

The risks attendant on the use of these instruments when used in suitable cases are trifling. It is important that a sufficiently deep hold be taken, or slipping of the instrument and laceration of the cervix are inevitable.

## CHAPTER VII.

### *DILATATION OF THE CERVIX UTERI WITH TENTS*

FOR this purpose three varieties of tents are in use—SPONGE, TANGLE, AND TUPELO.

(*a*) A Sponge Tent consists of a piece of sponge cut to the size desired, soaked in mucilage, rolled with string, dried, the string unrolled, and the sponge rubbed smooth, and finally covered with grease and carbolic acid.

It varies in diameter from the size of a crow quill to two fingers' breadth in thickness.

FIG. 12.

(*b*) A Tangle Tent consists of a piece of the stem of the *laminaria digitata* (sea tangle), compressed and dried, either tubular or solid.

FIG. 13.

(*c*) The Tupelo Tent is made from the root of the *Nyssa aquatica*, and varies from the smallest size up to the thickness of a thick finger.

FIG. 14.

*Relative Advantages and Disadvantages of the three varieties—*

1. SPONGE—
   - (*a*) They are apt to set up septic infection.
   - (*b*) They raw the cervix in withdrawing, owing to the close relation between the mucous membrane of the cervix and sponge.
   - (*c*) They cannot, therefore, be used in immediate succession, as the raw surface rapidly absorbs.
   - (*d*) They can never be used after cutting operations.
   - (*e*) They dilate rapidly.
   - (*f*) As a result of this, they set up fresh action in atonic uteri.

Of the three varieties, the sponge is, perhaps, the most dangerous. Still when properly managed, with careful antiseptic precautions, they give a very satisfactory dilatation of the cervix.

2. TANGLE—
   - (*a*) They are small in size—even the largest.
   - (*b*) After expansion become rough and sharp.
   - (*c*) They dilate slowly.

(*d*) They dilate irregularly, especially at the os internum, where the tent often remains constricted.

3. TUPELO—

(*a*) They dilate rapidly.

(*b*) They can be had of any size.

(*c*) They are smooth, and do not readily irritate surrounding tissues.

(*d*) They dilate very equally.

(*e*) They do not favour septic infection, and therefore can be used in succession, and after cutting operations.

They are, on the whole, the safest and most satisfactory.

*Length*—

A tent ought never to be under two inches long at the least, so that the point may go well beyond the os internum. The string for removal should pass completely through the tent, from base to apex, so as to prevent any portion of the tent being broken off during extraction.

*Object*—

To dilate the cervix uteri by means of their expansion under moisture.

*Indications for their Use*—

When, for the purpose of diagnosis or treatment, or both, it is found necessary to open up the cervix, or to explore or operate within the cavum uteri.

1. *For diagnostic purposes.*

For example:—to ascertain the presence of

(*a*) Fibroids, polypi.

(*b*) Abnormal conditions of the mucous membrane.

(*c*) Uterine cancer.
(*d*) Fragments of the placenta, etc.

2. *For therapeutic purposes.*
   (*a*) To remove polypi, fibroids.
   (*b*) To scrape off intra-uterine cancer.
   (*c*) To empty the uterus completely after abortion or hydatids.
   (*d*) To dilate a narrow cervix.
   (*e*) To straighten a flexion.
   (*f*) For various applications to the interior of uterus, etc.
   (*g*) In uterine hæmorrhage.
   (*h*) In dysmenorrhæa—sterility.

*Dangers—*

These are comparatively small when the tents are employed gradually and with care.

The following are the dangers which accompany the operation :—Perimetritis, parametritis, endometritis, pelvic hæmatocele, hysterical convulsions, pyæmia, tetanus. These are, however, comparatively rare, but as they occur sometimes most unexpectedly, they are to be kept in view in giving an opinion with regard to the safety of the operation. It is much more common to have nausea and vomiting, and very frequently there is a marked increase in the pulse and temperature. When such is the case it is best to desist from using tents, and delay further interference until the irritation has passed off. Tents are never to be employed without keeping clearly in view that serious consequences may result from even the simplest use of them.

*The Operation—*

After the bowels have been freely relieved, place the patient on her left side in the ordinary position. Having examined the os, select a tent (a tupelo one, for example) of a size corresponding to the calibre of the canal.

Dip the tent in carbolic oil. Placing it between the first and second fingers of the right hand, carry it up to the cervix, into which, by a little manipulation, the tip of the tent will readily enter.

If the vagina be sufficiently capacious, and in the married and multiparous woman it usually is, push the tent upwards and onwards with the thumb. When beyond the reach of the thumb, turn the palmar aspect of the fingers forwards, and press up the tent in that way. It will be found useful to fix the uterus with the left hand externally.

In the unmarried woman there is some difficulty in introducing more than one finger, from the presence of the hymen, or the narrowness of the vagina. This difficulty can be overcome by placing the tent on a stilette, or by grasping it in a pair of uterine polypus forceps, and so passing it up into the canal of the cervix. In virgins much help in introducing the tent into the os will be derived from guiding it with one finger in the rectum.

Care should be taken that the thick end of the tent is flush with the os externum, otherwise, when it expands, it will fail to dilate the os internum. This frequently happens. If the tent show a tendency to slip out, a piece of sponge or cotton wadding ought to be placed behind it.

Where much difficulty is found in introducing the tent, recourse may be had to the method first described by Marion Sims, of dilating the vagina by means of the duck-bill speculum, then fixing the uterus with a tenaculum, the tent is introduced by means of a pair of forceps, as in the accompanying diagram.

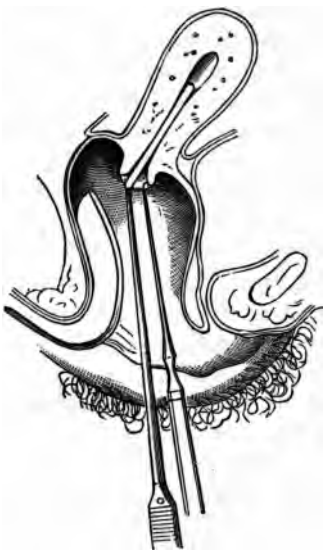


FIG. 15.—Sims' Speculum introduced—Uterus fixed with Tenaculum—Forceps holding Tent

If rapid dilatation is desired, it is well to instruct the nurse to syringe the vagina with warm water at regular intervals.

Leave the tent in for twelve hours in the case of a laminaria or tupelo tent; six hours is long enough in the

case of the sponge tent. On examination the following morning, and after dragging out the tent by means of the tape, note the expansion of the os, and if it be sufficiently large to admit the finger, and allow the exploration of the cavum uteri, then proceed with the examination or operation, as the case may be. If not, then introduce a second tent of a size corresponding to the now partially dilated cervix in the same way as before, and leave it in until evening, when the tent is to be again withdrawn, and an examination of the dilatation made, and a third introduced, if need be; and so on, until complete expansion is secured.

*N.B.*—In cases where sponge tents are used it is best not to put in another immediately after the first. It is better to wait till the raw surface, caused by the tent, has healed, or else keep up dilatation by other means.

*Difficulties of Introduction*—

1. May get caught in a fold of mucous membrane. This is easily overcome.

2. May be resisted by stricture at the os internum, which is the narrowest part of the canal. This is overcome by dilating bougies.

3. Flexions of uterus. First replace uterus by means of the sound, and then slip the tent in by the side of it.

4. Spasmodic stricture of os internum. This is rare, and may be overcome by chloroform.

5. Sometimes the uterus recedes as the tent is being pushed in, and gets beyond reach. This can be readily overcome by seizing the anterior lip with a tenaculum, and dragging it down.

*Precautions to be Observed*—

1. The introduction of tents (like every other opera-

tion on the uterus) should never be performed during, or directly before, or after, a menstrual period.

2. Not to be employed when endometritis, effusions, or adhesions are present.

3. No violence or force is to be used. It is better, therefore, to use one too small than too large.

4. While the tent is in action a suppository ought to be given to allay pain.

5. The patient should be kept at perfect rest while the tent is *in situ*, and for some days after its removal.

6. After the use of a tent the vagina should be well washed out with an antiseptic lotion. In all cases the strictest antiseptic precautions should be observed.

*Difficulties in Removal—*

Gentle traction on the string attached to the tent is usually sufficient. It is not necessary to introduce a speculum.

If the string break, as it sometimes does, from the softening effect of the discharge, seize the tent with a forceps or volsella, and withdraw it.

Sometimes the tent slips in, and the os closes over it. When such is the case it is best to dilate the os by a second tent, and then withdraw the tent by forceps, or incisions may be made in the cervix.

Mr Lawson Tait's ingenious apparatus for dilating the uterine canal by continuous pressure in some cases answers well.

In cases of dysmenorrhœa, rapid dilatation of the cervix can be effected by means of graduated steel bougies when it depends on a constricted cervix or an acutely flexed uterus, and specially if the operation require to be frequently repeated. Temporary benefit will be obtained by this procedure.

## CHAPTER VIII.

### *THE ASPIRATOR*

The instrument may be employed,

1. As an aid to diagnosis.
2. As a means of treatment.

It may be used to determine the contents and nature of tumours pressing—

1. On the abdominal wall.
2. On the vaginal roof.

*A.* FOR DIAGNOSTIC PURPOSES,

In abdominal tumours the hypodermic syringe suffices.

I. *Through abdomen.* Percuss and palpate so as to determine a point at which the intestines do not lie between the tumour and abdominal wall. Then draw the skin a little to one side, and with the piston of the syringe pushed home, plunge the needle up to the shoulder, and carefully withdraw the piston, as long as fluid enters, or until the syringe becomes full. Then withdraw the needle, and allow the skin to slip back. The valvular nature of the opening will prevent the ingress of air, but additional security will be obtained by covering the puncture with a piece of plaster.

The fluid can now be examined.

1. It will be found in *ovarian* cysts to be from pale yellow to chocolate colour, coagulable by heat and nitric acid, and under the microscope will be found to contain the "ovarian corpuscles."
2. In cysts of the broad ligament, it is clear, without solid contents, not coagulable, and containing metalbumen.
3. In fibro-cystic tumours of uterus, it is light yellow, without solid matter.
4. In ascites, it is pale yellow, and coagulable in the cold as well as by boiling.
5. In extra-uterine pregnancy, the character of the fluid varies with the stage of the condition.
6. In abscess resulting from parametritis, etc., the presence of pus cells will at once be pathognomonic.

II. *Per Vaginam.* The tumour when retro-uterine or otherwise deep seated, will often be better reached through the vagina.

The ordinary hypodermic needle being too short to enable us to reach the vaginal roof easily, it will be found of advantage to use the longer and more easily guided aspirator needle.

The exact spot at which the swelling is most prominent, having been carefully made out, the needle of the aspirator protected by the pulp of the forefinger is carefully guided upwards, and plunged into the tumour. Care should be taken to avoid wounding any

of the large vessels which may sometimes be felt in the vaginal roof.

In order to avoid injuring the finger, or the walls of the vagina, by the needle point in introduction, it is well to protect the latter by means of a small piece of cork, which can be pushed off by the forefinger when the roof is reached.

In addition to the various fluids enumerated above, it may be found that the needle now withdraws *blood* from the tumour, which would indicate a hæmatocele.

*B.* THE THERAPEUTIC APPLICATION of aspiration consists in the emptying of the tumour found to contain fluid.

For this purpose the aspirator is employed in the ordinary way, and the process continued until the fluid ceases to flow.

The following precautions are to be observed:—

1. The operation should be conducted with the patient in bed.
2. The skin puncture should be valvular.
3. The puncture should be protected with plaster.
4. Complete rest for some days, together with warm fomentations to the epigastrium, should be enjoined.

# Part II.—Therapeutic

## CHAPTER I.

### *THE VULVA*

**a. Abscess of labium majus** is to be treated as an ordinary abscess.

**b. Inflammation and abscess of the vulvo-vaginal glands.**—The result of the inflammation of the gland is, that the duct is obliterated, and an abscess forms. The abscess varies in size, from a cherry to the dimensions of a small orange. The natural terminations are:—

1. The abscess may discharge through the duct.
2. It may burst.
3. It may become chronic.

As soon as fluctuation is detected, the abscess should be opened by a free incision. In making the incision, care must be taken not to injure the transverse artery of the perinæum. This can be done by making the longitudinal incision on the inner surface. If the artery is severed it must be tied. In any case there is usually considerable hæmorrhage. If it is profuse it can be checked by the application of a pledget of lint soaked

in perchloride of iron. After the incision, the cavity should be stuffed with carbolised lint.

Sometimes fistulous tracts result along with persistent discharge and induration all round. If such should be the case, a free incision should be made, and the sac treated with iodine.

c. **Hypertrophy of the labia minora,** if to such an extent as to give inconvenience, should be removed. This can be best accomplished by Paquelin's thermo-cautery.

d. **Occlusion of vulva,** whether congenital or after an injury, is to be treated by simple tearing with the fingers, or in severe cases by the use of the bistoury.

e. **Warts,** which are not necessarily of syphilitic origin, and **condylomata,** which indicates constitutional syphilis, are best treated :—

If large and projecting, with scissors or Paquelin's thermo-cautery.

If sessile, they may be dusted with calomel, boracic acid powder, or equal parts of savin and Fuller's Earth.

Strict cleanliness is absolutely essential. Vaginal washes should be freely used and any discharge checked. Of course in the case of condylomata, anti-syphilitic remedies must be administered internally.

f. **Abrasion and ulceration** of the vulva are to be treated on ordinary principles.

g. **Pruritus.**—One of the most effectual lotions is a strong infusion of tobacco, with the addition of Eau de Cologne to mask the odour,

or

Acidi Hydrocyanci diluti, ʒj.,
Unguenti Bismuthi ℥j.,

or

Unguentum hydrargyri,

or

A lotion of bichloride of mercury,

or

Goulard water and laudanum.

The application of nitrate of silver is often most useful. The following prescription is very serviceable:—

℞

Hydrargyri chloridi corrosivi, grs.iv.
Bismuthi oxidi, grs.xxx.
Acidi Hydrocyan: dil: ♏xxx.
Aquam calcis ad ℥viij.

Apply warm two or three times daily.

In every case the cause must first be ascertained, and the remedy directed to its removal; but, especially, attention must be paid to any vaginal discharge, and any abraded or ulcerated condition of the cervix.

**h. Abscess of the perinæum** is not by any means infrequent as a result of violence or a chill. It is easily diagnosed by a hard tender swelling in the perinæum, as well as by the acute pain it causes when the bowels act. If not carefully watched it is apt to cause fistula in ano. It ought to be well poulticed, and early and freely laid open. The discharge from these abscesses, as indeed from all abscesses around the external genitals, is peculiarly fœtid.

i. **Fissure of the ostium vaginæ** may remain after labour, but occurs most usually shortly after marriage. It is extremely painful. The fissure is easily seen on separating the labia, and readily bleeds. If slight, the application of nitrate of silver is enough. If more severe, it had better be torn or slightly incised. In any case the patient should abstain from intercourse, and use an astringent wash.

## Imperforate Hymen

When the membrane is thick, fleshy, and completely imperforate, the condition will indicate itself by the obstruction to the menstrual flow, and by the increased bulging at each period.

The operation should be performed at the middle of an intermenstrual period, and the opening should be made first by means of a heated wire passed through the membrane. The retained discharge, which is tarry, dark coloured, and often fœtid, should be permitted to escape slowly into a pad of oakum. This may occupy some days. The opening should then be dilated by the vulcanite dilators, a syringe introduced, and the canal washed out with carbolised water. The orifice may be still further enlarged by an incision, and a vulcanite or glass plug should be introduced from time to time in order to prevent too rapid healing and contraction. Such a method of operating avoids the risk of septicæmia which accompanies operation by the bistoury, which permits the escape of the fœtid discharge on a raw wound. Where the hymen is cribriform, permitting the escape of the menses, but acting as a bar to sexual intercourse, a free incision

may be made with a knife, and the above-mentioned precautions taken to prevent too rapid healing.

### Operations for Rupture of Perinæum.

Minor tears of the perinæum generally, if left to themselves, heal by second intention in from three to five weeks.

There can be little doubt that in cases where the perinæum is torn during labour, it is best to repair the injury at the time, unless the injury to the parts is great, and involves the anus and anterior rectal wall. It is usual to obtain complete union by the operations performed just after labour.

The recognition of these perinæal tears after delivery is important. The perinæum should always be inspected. This can be easily and accurately accomplished by placing the patient on her side. The upper buttock is drawn apart, by which means the perinæum is brought distinctly in view. It is necessary, in order to find out the depth and nature of the tears, that a finger must be passed into the rectum, and the anterior rectal wall pushed forward to the rent. In this way the thickness of the anus, the surface of the wound, and the relation of parts generally can be carefully made out.

For Recent Tear of the Perinæum

*Instruments*—

1. Two or three strong curved needles in handles.
2. Catgut, silk, silver or silkworm gut sutures.
3. Dissecting forceps.
4. Scissors.

*The Operation—*

The patient may be either on left side or back in the lithotomy position. The latter is preferable if two or three assistants can be obtained. Anæsthesia is induced. The vagina is washed out with carbolised water.

If the tear is at all deep, the stitches must be passed well into the tissue of the perinæum (half or three-quarter inch). They should enter and pass out a clear half inch from the edge of the wound. Three are usually sufficient; four if the tear extends up *to* the rectum. If it involves the rectum a distinct stitch must pass through the torn edges of the tube. The sutures should not be tied until all have been passed, and the pressure should be firm and equable. The vagina must be again syringed at the conclusion of the operation. The patient is placed in bed, the knees being tied together.

*Removal of the Stitches—*

The stitches are removed on the fifth or sixth day. If union is not complete, and there is no extensive irritation of the parts, they may remain for a longer period. The vagina must then be thoroughly cleansed.

### For Old-standing Perinæal Rupture

*Instruments—*

1. Sharp-pointed, straight, and curved scissors.
2. One or two short bistouries or scalpels.
3. Needles curved, and in handles.
4. Catgut or horse-hair sutures.
5. Dissecting forceps.

*The Operation—*

By far the most important point in the operation is

the careful and complete removal of all granular or superficial tissues over the surface of the vaginal tear. To do this, the patient being in the lithotomy position, and thoroughly anæsthetised, pass one or two fingers of the left hand into the rectum, and while the labia are held apart by assistants, the extent of the area necessary to be denuded should be determined and carefully mapped out; then by means of the scissors the whole surface is carefully rawed, beginning at the lower and external aspect and working up. As much as possible should be removed in one piece, and especial care must be taken that the edge of the torn surface be carefully bared. This may be effected by means of the dissecting forceps and scalpel, but usually the scissors are most serviceable. The bared surface will have a triangular shape. The two sides (*i.e.*, the bisected halves of the triangle), are now brought together and carefully co-apted. The *handled needles*, charged with stout catgut, are then passed deeply in, entering half inch beyond the line of joining, passing three-quarters of an inch deep, passing out half an inch beyond the further edge. Four or five of these are necessary. They are carefully and firmly secured. Some recommend the use of quilled sutures, but they are not necessary; it is well, however, to introduce three or four superficial sutures of horse hair between the deep ones. They render the healing of the superficial wound more rapid and perfect.

The patient is placed in bed with her knees carefully secured. A piece of salicylic wool should be applied to soak up the discharge. The urine should be drawn off by a catheter, and the bowels carefully relieved by a daily enema. This applies to both operations.

*Removal of the Sutures—*

This is done on the eighth or tenth day, unless irritation sets in before that time. It is often well to remove only one or two stitches at first, and watch the result of the operation before entirely removing all the support.

If there is much fœtor, the vagina may be carefully syringed with tepid water and Condy's fluid, but great care must be exercised to avoid undue force.

## CHAPTER II.

## *THE VAGINA*

---

### Vaginismus

THE treatment will depend upon the cause.

1. If it depend on hysteria, it must be treated on general principles. Tonics, entire physiological rest, sedative injections, and pessaries.

2. If from fissure of the rectum, or sores on the edge of the perinæum and vulva, these must be treated on ordinary principles.

3. If from hyperæsthesia of the torn edge of the hymen, or hypersensitive carunculæ myrtiformes, the patient should be placed under chloroform, in the lithotomy position, and while assistants hold the labia separate, the operator with a pair of scissors should carefully dissect off the affected structure. Ice or pressure will control any bleeding which is likely to follow. The vagina must then be plugged with strips of lint soaked in carbolic oil (1-20).

Care must be taken to remove the whole irritable circle, or else the cure will be incomplete.

It is desirable that the patient have a vaginal dilator, such as that recommended by Marion Sims, introduced and worn for a few hours daily. It can be kept in position by a T bandage.

4. Sometimes it is necessary, where the vaginal orifice is very small, to make two or three incisions through the skin, near the posterior fourchette. The vaginal orifice should then be stretched with the fingers, and a dilator worn for an hour or two night and morning.

## Vaginal Applications

1. Injections, Washes, and Lotions.
2. Tampon or Plug.
3. Pessaries.

### I. Injections

Injections, washes, and lotions are of various kinds, and in one form or another are very constantly used in the treatment of uterine affections. These remedies, however, are often abused, and women are frequently recommended a vaginal wash as routine, without there being any special indication for such treatment. It is important, in ordering the use of any vaginal douche or wash, to give very careful directions to the patient as to the method of its employment, as, either from the instrument being unsuitable, or from the incautious use of a lotion, the patient's condition is either aggravated or entirely unaffected. If not otherwise instructed, women are apt to employ an ordinary glass syringe, which is quite useless.

### *Methods of Application*

1. THE SIMPLE DOUCHE.—By means of a vessel made either of tin or india rubber, placed at a convenient height above the patient, and to which is attached a tube with a vaginal piece, the fluid is allowed to flow into the vagina in a continuous stream.

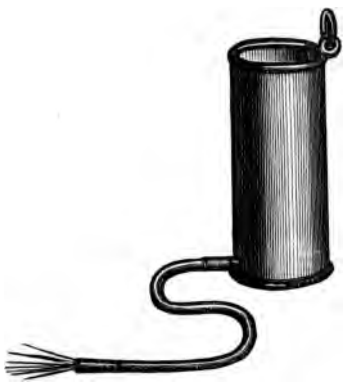


FIG. 16.—Simple Vaginal Douche

2. THE SYPHON.—A jug or ewer is to be filled with the required fluid, and placed at a considerable height above the patient. Take a long india rubber tube with a hollow ball of lead at the one end and a vaginal piece at the other, and place the leaden end on the floor of the vessel. The lotion can now be made to flow into the vagina in a continuous stream, by the simple device of

drawing the forefinger and thumb along the tubing from the rim of the vessel downwards.

3. THE VAGINAL SYRINGE.—The most convenient

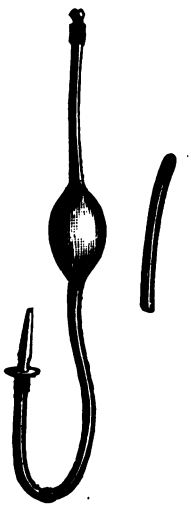


FIG. 17.
Higginson Syringe.

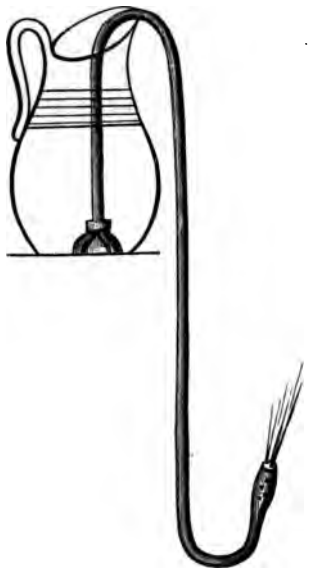


FIG. 18.
Syphon Douche

form is the ordinary Higginson enema syringe, with a vaginal tube. When this cannot be got, an ordinary clyster pipe can be substituted, but is much less satisfactory, and is only to be used as a *dernier ressort*. The American Davidson syringe is a distinct improvement.

The vaginal syringe, however, has several objections:—

1. It is hardly possible to expect a woman in a constrained position to compress an ordinary india rubber tube for ten or twenty minutes, and it is not every woman who can get an attendant for the purpose.
2. It is apt to allow of the entrance of air.
3. It very easily gets out of repair, and, if not used carefully, more especially if an ordinary clyster pipe be employed, the amount of force is apt to be too great.

The ordinary vaginal douche, or the syphon, is under most circumstances to be preferred as being the most efficacious, but in many cases, as when simple cleansing of the vagina is indicated, the Higginson syringe answers admirably.

### *Position of the Patient*

In the great majority of cases, except after operations, or labour, the patient employs the lotion herself, and by sitting over a bed-pan or bidet, or some similar utensil, the fluid can be applied to the vaginal wall or cervix, and allowed to flow out without wetting the patient's clothes. Or the patient may lie on a low couch with the nates well over the edge, and thus avoid all fatigue. This position is useful when the lotion is to be long continued, as in cases of induration of the cervix.

In using all vaginal injections, except in those which are used for the most simple cleansing purposes, it is

most important that the patient lie down on her back, that she should be recumbent with the hips well elevated. The reasons for insisting on this position are :—

1. It prevents all the fluid escaping, and thus allows a certain quantity of it to remain in contact with the cervix and vaginal vault until the patient resumes the erect position.
2. The vagina is easily distended in this way. The abdominal viscera sink away from the pelvis, and thus any pressure is removed.
3. Venous hyperæmia is relieved.
4. The vagina is lengthened, and thus the lotion comes in contact with the whole surface.

The obvious objection to this position is the difficulty the patient experiences in remaining long in the position, and of having a convenient vessel so placed as to retain the fluid. This latter can easily enough be overcome by using an ordinary bed-pan, or, what is better, a metal one with a waste-pipe attached.

*Introduction of vaginal tube—*

This must be introduced along the posterior wall of the vagina, and the point directed into the posterior fornix. This latter point is important, as if it is not attended to, the end of the tube might be introduced into the cervix, and the fluid injected into the uterine cavity: an accident which has been attended by very serious results, and one which might readily enough occur in the hands of an inexperienced person, especially if the uterus be low in the pelvis or retroverted and the os patulous.

*Indications*

I. For Ordinary Cleansing Washes—

These are indicated as matter of routine with all married women once or twice a-week, and oftener if there is any leucorrheal discharge.

II. For Astringents—

(*a*) In all forms of vaginal and uterine leucorrhœa.
(*b*) In uterine or vaginal hæmorrhage.
(*c*) Erosions of cervix.
(*d*) Gonorrhœa.
(*e*) Malignant disease.

III. For Soothing Hot Injections—

(*a*) Chronic ovaritis.
(*b*) Induration of cervix.
(*c*) In all forms of chronic uterine and ovarian diseases.
(*d*) Whenever there is chronic venous congestion of the pelvic organs.

*Varieties*

1. Astringent.—For example :—

Zinci Sulphatis 3ij.
vel.
Cupri Sulphatis 3i.
vel.
Acidi Boracici 3iij.
vel.
Ferri Perchloride
vel.
Aluminis 3iij.

} dissolved in a quart of water.

Various vegetable astringents, such as oak bark, logwood, vinegar, etc.

A weak solution of perchloride of iron in water will be found useful in bleeding from malignant or ulcerating surfaces.

Ice-cold water for three or four minutes is valuable in cases of hæmorrhage.

2. DISINFECTANT — to wash out the vagina. — For example :—

Simple tepid water.
Chlorine water.
1 to 40 carbolic acid wash.
Solution of permanganate of potash (Condy's fluid).
Vinegar and water.
} a wine glassful in a quart of water.

3. SOOTHING AND DEOBSTRUENT.—For example :—

Hot water—as hot as the patient can bear, 110° F., with or without salt. When salt is used, a handful to the quantity of water used is sufficient.

Hot water and vinegar.

Liquoris Plumbi acetatis ℥ij.
vel.
Tincturæ Belladonnæ ℥ss.
vel.
Tincturæ Hyoscyami ℥ss.
} in a pint of warm water.

The duration of the injection varies :—

For cleansing the vagina, one or two minutes is usually sufficient.

For ice-cold water or astringent washes, three to five minutes.

For hot water and soothing lotions, fifteen to twenty minutes, at least twice daily, and continued over many weeks or months. The perseverance in this treatment is most essential. It should only be interrupted during the menstrual periods.

Three points should specially be noted and carefully explained to the patient, viz. :—

1. The strength of the wash,
2. The temperature,
3. The amount of pressure,

as the use of vaginal washes is not without dangers. These are—

1. The entry of air, especially in puerperal conditions.
2. The injection of the fluid into the uterine cavity, as has been already mentioned.
3. Exacerbations of chronic inflammatory conditions.
4. Lasting neuralgiæ.
5. The use of vaginal injections immediately after sexual intercourse with the view of preventing conception is not without danger, and is to be avoided.

When their use is carefully explained to the patient, it must be admitted that they are very safe.

It is convenient here to mention the method of the long-continued use of water, holding various salts in solution, as applied to the vagina and cervix by means of the bath speculum.

While the patient is in an ordinary full or sitz bath, a perforated speculum is introduced into the vagina, and the fluid allowed to come in contact with its walls and the cervix, through the perforations in the side of the speculum.

These baths have, however, more of a general than local effect.

## II. Tampon or Plug

### *Indications*

(*a*) During abortion.
(*b*) After operations.
(*c*) To check hæmorrhage.
(*d*) To relieve congestion of the uterus, ovaries, or vagina.
(*e*) In uterine dislocations.
(*f*) With a view to retain other bodies in utero, such as tents, stem pessaries, etc.
(*g*) In ovarian displacements.

Various materials are in use for this purpose, *e.g.*, cotton-wool, lint, sponge, air-bag, tow, oakum, wool, or lamp-wicking.

### *In Cases of Hæmorrhage*

(*a*) Having emptied the bladder and rectum, place the patient in the usual semi-prone position, introduce a Sims' speculum, and allow the vagina to expand. Clear out all clots. Several pledgets of wet cotton wadding are then to be introduced, one after the other, and packed firmly on and around the cervix with a pair of uterine polypus forceps until the vagina is entirely filled. The pledgets are best soaked in an astringent or antiseptic solution. The vagina must be carefully packed to its utmost limits, and every pos-

sible corner thoroughly filled. As the vagina is being filled the speculum is gradually withdrawn. This is, perhaps, the safest, as it certainly is the most effectual, method of controlling uterine hæmorrhage by the plug. A plug such as this is sufficient to check any uterine hæmorrhage, and it is the only sure method of so doing. In from eight to ten hours the plug should be removed by introducing the speculum, and withdrawing the pledgets in the inverse order to their introduction. This can readily be done with a pair of dressing forceps. Sometimes, owing to the pressure of a large tampon, the urine requires to be drawn off with the catheter. Such a plug should never be allowed to remain in the vagina beyond twenty-four hours, as it soon becomes offensive, and during its presence in the vagina the bowels should not be allowed to act. With a vagina thoroughly plugged in this way, not a drop of blood can escape.

(*b*) Strips of cotton wadding or lint, about two inches wide, with a string attached to each to facilitate removal, are to be introduced into the vagina. A speculum should be used, either a tubular, or, better, a Sims. The speculum is withdrawn as the vagina is filled, and the cotton packed in tight with the finger. The strings are allowed to hang outside the vulva. As pointed out by Atthill, when a speculum cannot be procured, the handle of a

spoon can be used as a substitute to draw back the perinæum.

(*c*) An ordinary Gariel ball pessary, introduced into the vagina collapsed, and then distended with air, forms a convenient plug. The blood is apt, however, to escape between the walls of the vagina and the side of the ball.

(*d*) In cases of emergency, an ordinary silk handkerchief can be introduced without a speculum.

(*e*) An ordinary sponge may be employed, but it makes a very unsatisfactory plug. Where any plug comes in contact with the bleeding surface, it is desirable to soak the first pieces in a solution of alum, in the glycerine of tannin acid, or perchloride of iron; and otherwise to prevent the fœtor which invariably accompanies any plug when left for a few hours in the vagina, glycerine or carbolic oil should be used freely.

(*f*) In cases of hæmorrhage from the interior of the uterus, the insertion of a sponge tent within the cervix forms a complete plug.

## The Glycerine Plug

*Indications*—

1. Acute or chronic inflammation of the uterine body and neck, or ovaries.
2. All cases of congestion of pelvic organs.
3. Uterine and ovarian displacement.
4. After all operations on cervix.
5. After applications to endometrium.

The glycerine plug, which is both a most serviceable

and extensively employed method of treatment in these affections, consists of a piece of cotton wool, which, when thoroughly well soaked in glycerine, is about the size of a Tangerine orange. To ensure complete saturation, about an ounce of glycerine should be slowly poured on the cotton, while this is being rolled between the palms of the hands. A piece of string is to be attached to it, and the plug is thus to be passed through a speculum, and packed against the cervix, and a dry roll of cotton placed behind it, care being had to leave the string hanging free from the vulva. These plugs should always be introduced through a speculum, because in this way the plug can be more accurately placed against any point where pressure is specially desired.

The patient is to be instructed to remove the plug, by dragging on the string, in the course of seven or eight hours, and to syringe the vagina with hot water, or to use a hot vaginal douche.

The practitioner can conveniently remove the plug by means of a double screw, as shown in the diagram.

FIG. 19.

The plug thus applied gives rise to a copious watery discharge, which the patient should be warned to expect.

It seldom fails to give the patient at least temporary relief, and in the majority of cases is of permanent benefit in relieving local congestion. If permanent good is to be expected, the application must be kept up for

weeks or months, sometimes daily or sometimes twice daily, and after the removal of each plug a hot injection must be carefully used. This treatment can be perfectly well carried out by a properly instructed nurse.

These glycerine plugs can be introduced and withdrawn by the patient herself, if need be. Barnes has devised an excellent speculum for this purpose. It is made of vulcanite, consists of two blades with a pivot in the middle, and a piston. The blades on the one side of the pivot are made to diverge, while those on the other side close to form a tube, in which the cotton wadding is placed. The instrument is then introduced within the labia, and pushed backwards. By closing the external diverging blades, and pressing down the piston, the pledget is introduced.

It must be kept in view that in anæmic women the persistent use of this plug is apt to set up ovarian and other neuralgic symptoms, and obviously when such are noticed its use must be interrupted.

### *In Cases of Retroversion*

After replacing the uterus with the sound, a plug of cotton wool, soaked in glycerine or carbolic oil, is packed in front of the cervix, and one or two more are pressed beneath the first, so as to push the cervix backwards. The same can be done with good results, after the introduction of a stem pessary, such as that of Eklund, so as to press the flat cervical end of the pessary backwards.

## III. Pessaries

Pessaries, as the term is generally understood, are of two kinds—

1. *Medicated*; and 2. *Mechanical*

Medicated pessaries—vaginal suppositories—are somewhat of the size and shape of a Minie bullet. Their object is to bring certain medicaments in direct relation to the vaginal wall or cervix. The vehicle varies: ointment, wax, lard, cocoa butter, or gelatine; the two latter being the forms most commonly in use. Those made of gelatine are by far the most elegant and cleanly.

The following is a list of those in general use: —

### I.—Medicated Pessaries

*Minie bullet shape, of uniform size; weight of each, two drams*

| | | | | |
|---|---|---|---|---|
| Atropine | Sedative | | 1-20 | grain. |
| Belladonna | do. | | 2 | do. Alc. Ext. |
| Opium | do. | | 2 | do. |
| Morphia | do. | | ½ | do. |
| Bismuth, Oxide | Cicatrising & Emollient | | 15 | do. |
| Borax | do. | do. | 15 | do. |
| Zinc, Oxide | do. | do. | 15 | do. |
| Tannin | Astringent | | 10 | do. |
| Alum | do. | | 15 | do. |
| Alum and Catechu | do. | | 15 | do. of each |
| Do. Iron | do. | | 10 | do. |
| Acetate of Lead | do. | | 7½ | do. |
| Acetate of Lead & Opium | do. | | 5 | do. 2 gr. Opium |
| Matico | do. | | 10 | do. |
| Gallic Acid | do. | | 10 | do. |
| Perchloride of Iron | Hæmostatic | | 5 | do. |
| Persulphate of Iron | do. | | 5 | do. |
| Sulphate of Zinc (dried) | Caustic | | 10 | do. |
| Carbonate of Soda | Antacid | | 15 | do. |
| Iodide of Lead | Alterative & Resolvent | | 5 | do. |
| Do. do. & Atropine | do. | do. | 5 | do. 1-20 Atropine |
| Do. Potassium | do. | do. | 10 | do. |
| Bromide of Potassium | do. | do. | 10 | do. |
| Mercurial | do. | do. | 30 | do. (*Ung. Hydrarg.*) |
| Carbolic Acid | Disinfectant | | 5 | do. |

Unless gelatine be specially ordered, the vehicle usually employed is cocoa butter.

*Indications—*

1. To allay pain, *e.g.*, those made of atropine or morphia.
2. In erosions and ulcerations, *e.g.*, zinc or bismuth.
3. In chronic inflammation, *e.g.*, iodide of lead or mercury.
4. In cases where injections cannot be conveniently employed, or to alternate with them, *e.g.*, alum.

*Method of Use—*

One is inserted, usually by the patient herself, within the vagina, as far as the finger can reach, allowed to remain there, dissolve, and become absorbed.

## II. Mechanical Pessaries—Uterine Supports or Hysterophores

These are of endless variety. It is foreign to our present purpose to attempt to classify, far less to describe, the numerous forms that are in use. The practitioner's requirements will be best met by simply and shortly describing those pessaries which, from personal experience and daily use, appear the most serviceable in the various displacements, without entering into a detailed and confusing account of pessaries generally.

I think I may safely say that the less the student and junior practitioner meddle with complicated pessaries, so much the better for the patient.

The simplest pessaries are the safest, and productive of most good. It is impossible to lay down any hard and fast rule as to the form of pessary to be used in different displacements. The true secret of using a pessary aright, consists in having the uterus thoroughly well replaced before its introduction, and then in adjusting the pessary to each individual case, so that it will act on the uterus to the best advantage. This requires time, a little ingenuity, and a considerable number of pessaries from which to make the selection.

They may be divided into two classes—

**I. Vaginal**
**II. Intra-Uterine**

### I. Vaginal

*Indications—*

For various forms of uterine displacements—Prolapsus including cystocele and rectocele.
Retroversion.
Retroflexion.
Anteversion.
For downward displacements of the ovary.

It will be most convenient to treat of pessaries in relation to the various displacements.

#### 1. Prolapsus

(*a*) An ordinary Hodge pessary will be found very serviceable in many simple cases. Its full description will be given later on.

(*b*) The ring pessary, first introduced by Meigs, and modified by Hewitt, is worthy of a trial in

many cases. Its method of use will be sufficiently obvious from the following :—

FIG. 20.

(*c*) Zwanks' pessary, modified by Godson.

The wings, made of vulcanite, are introduced closed. The metal feet are then

FIG. 21.

brought together by the finger and thumb, and locked. In this way the wings expand and rest on either vaginal wall.

It ought to be removed at night.

One great advantage of this form of pessary is, that both introduction and removal can be effected by the patient herself.

(*d*) The Gariel air-ball pessary is a simple india-rubber ball, with a tube and stop-cock attached. It is introduced collapsed into the vagina, and dilated by means of an ordinary syringe to the required degree. The stop-cock is then turned, and the tube carried up over the patient's abdomen, and retained there by a bandage. The pessary can be introduced and removed by the patient herself.

All forms of SOLID ball pessaries are to be avoided, as they distend the vagina, and destroy the contractility of its walls.

(*e*) Pessaries, such as those of Cutter and Clay, which have their support externally, will occasionally be found suitable. It is unnecessary to describe any other than that of Cutter, which is perhaps the most useful of this variety. It consists, as in the accompanying

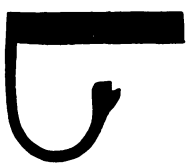


FIG. 22.—Cutter's Pessary.

diagram, of a vulcanite support; to this there is attached a curved stem, which passes down-

wards and backwards over the edge of the perinæum, but without touching it, and is attached by india-rubber tubing to a waist-band.

(*f*) In some cases, more especially of senile prolapsus, Thomas' Anteversion Pessary will be found useful. *See* page 104.

(*g*) The T bandage, in cases of complete procidentia, or where a vaginal pessary threatens to come out, will give beneficial support.

(*h*) The disc and stem pessary is by no means to be overlooked. It is not, perhaps, a very scientific apparatus, and has many of the objections of a ball. It is, however, useful as a *dernier ressort* in some cases of procidentia. It can be worn either with or without a T bandage. It is best used with a T bandage, as a less disc will support the uterus.

It must be regularly removed, and great attention paid to cleanliness.

(*i*) A vaginal tampon of oakum is sometimes the only available means, short of operation.

The use of solid ball or ring pessaries is, under all circumstances, to be deprecated. They do not act on any principle. They simply plug up the vagina, and keep the uterus out of sight. They accomplish this, however, at the expense of the vaginal walls, for, by the continuous pressure and stretching, the contractility of the vaginal walls is lost, and, after the removal of the pessary, the condition is worse than before. I have twice removed large solid metal pessaries, which had been left in for a long period, and which had perfor-

*INTRODUCTION* OF HODGE PESSARY.- FIRST STAGE.

ated the bladder wall. Sometimes, however, by the healing of the ulcerated surface, caused by the pressure of the pessary, the vagina contracts and the displacement is so far remedied. It is scarcely needful to say that such an issue is not to be counted on.

In most cases where there is much deficiency of perinæum, and marked prolapsus, any form of pessary will be of comparatively little use, and recourse will require to be had to operation for narrowing the vagina.

### 2. Retroversion and Retroflexion

For both of these displacements, but more particularly the former, the Hodge pessary, or its modification by Albert Smith, which is even better, will be found the most generally useful. Subjoined is a diagram showing the Hodge pessary and two modifications of it.

*Its Form—*

Sigmoid. The upper bar is wider and flatter than the lower.

Fig. 23.

The most convenient material is either white flexible metal or vulcanite; recently celluloid has been used with good results. Ordinary gutta-percha is objectionable, as it is difficult to keep clean, and liable to crack.

*Position in the Vagina—*

The upper or broad bar should lie well back in the

posterior fornix, the lower or pointed extremity behind the symphysis pubis, above the meatus urinarius. Between the two lateral bars the cervix hangs free.

*Method of action—*

It acts as a lever. The anterior, or sub-pubic limb of the pessary lying in contact with the anterior wall of the vagina is with each inspiration pressed down, while simultaneously the posterior bar rises and presses the fundus uteri upwards and forwards through the posterior fornix vaginæ.

*Size to select—*

Make a careful vaginal examination, note the capacity of the vagina, and then select a pessary which is as nearly a model of it as possible; taking especial care that it does not stretch the vaginal walls. If there is any difficulty, the vagina can be previously examined with a Sims speculum, but this, as a rule, is quite unnecessary.

*Method of Introduction—*

Replace the uterus with the sound, except where it is fixed by adhesion. The pessary is then to be introduced between the labia, until the upper or broad limb is entirely within the vagina. Now turn the pessary so that its shorter axis lies transversely. The upper bar will then, probably, lie in front of the cervix. By placing the finger on this upper bar, and pressing it backwards and downwards, it will slip into position behind the cervix. Even where adhesions are present the use of a "Hodge" is not contra-indicated, as its presence tends gradually to stretch them and support the uterus.

*INTRODUCTION* OF HODGE PESSARY, 2nd STAGE.

INTRODUCTION OF HODGE PESSARY, 3rd STAGE

Sometimes, when the displacement is marked, it is useful to introduce the pessary while the sound is still *in utero.*

*After-management—*

1. Instruct the patient to use a cleansing vaginal wash daily, as the presence of any pessary causes a discharge.

2. The instrument is to be worn continuously—not to be removed at night, nor during menstruation.

3. The patient should be seen and examined frequently, and the uterus from time to time replaced by the sound. The pessary should be taken out and cleansed from time to time.

4. Any accompanying erosions of the cervix should be treated.

5. Intercourse may take place, and pregnancy occur, with the pessary *in situ.*

6. Attention must be paid to keeping the rectum empty, as a loaded rectum will displace the instrument.

7. After a time, the vagina alters in shape, and a slightly modified pessary will require to be used.

8. The patient should always be informed that she is wearing a pessary. Further, she should be unconscious of its presence, and instructed to return at once when she becomes sensible of it.

*Caution—*

Avoid using a pessary which stretches the vaginal walls. Any instrument which, when introduced, causes pain or discomfort, ought to be at once removed, and another of a different size and shape introduced.

Be careful that the upper limb does not get caught

at the angle of flexion, and so only support the uterus without straightening it.

Sometimes a good deal of trouble, in the wearing of a pessary, is caused by an ovary prolapsed into Douglas' pouch. Even after removing, as far as possible, all congestion and tenderness, yet the patient will be unable to wear the pessary.

### 3. Anteversion

Grailly Hewitt's pessary acts very well. A sufficiently clear idea of the position of the pessary in the vagina may be gathered from the accompanying woodcut.

Fig. 24.—Cradle Pessary *in situ*.

(*a*) Lies in posterior fornix vaginæ.
(*b*) Wider end for lower end of vaginal wall.
(*c*) Lies in front of cervix.

*Object*—

Is to elevate the fundus uteri, and keep the uterus at rest.

*Method of Introduction* (*Hewitt*)—

Retrovert the uterus with the sound. One end of the pessary (*a*) is rather narrower than the other. This narrow portion is introduced first, and having been pushed inwards a short distance, pressure is made on the saddle part of the instrument, which then passes close under the meatus urinarius, and shoots into its place. The lower end (*b*) of the instrument is now pushed a little upwards, and the operation is complete.

It is important to secure a pessary which fits accurately. If this be done, the Cradle pessary may be worn for months, or even a year. The patient should be examined from time to time to see that no injurious pressure is brought to bear on the cervix. The pessary in no way interferes with menstruation or defecation.

Thomas' pessary consists essentially of a ring pessary, to the anterior aspect of which is articulated a bow. The pessary is introduced closed, in the same way as the Hodge; then the folded bow is allowed to slip in front of the cervix, and in this way lifts up the fundus uteri.

Neither of these anteversion pessaries should be used if there be any remains of former pelvic peritonitis. The uterus should be thrown back into retroversion occasionally with the sound, and maintained there for a minute or two. If the pessary gives pain, it should be at once removed.

In using Thomas' pessary, care must be taken that the bow in front of the cervix does not cause injurious

pressure upon any one point. This is very apt to occur if the pessary be not frequently examined. If there be undue pressure it should be changed. A warm vaginal douche should be used nightly.

FIG 25.—Thomas' Pessary *in situ*

Thomas recommends that a supra-pubic pad should be worn, so as to remove all weight from the fundus. He further insists that the patient, while wearing his instrument, shall remain under the gynecologist's care, or else that it shall be explained to her how she can remove the pessary herself.

### 4. ANTEFLEXION

Some cases of this displacement are benefited by the anteversion pessaries just described, but in the great

majority of cases recourse must be had to intra-uterine pessaries.

## II.—Intra Uterine Stem Pessaries

In regard to the use of these instruments, the opinion of the profession is considerably varied. It is certain that they have been as unjustly condemned by some, as they have been absurdly lauded by others. Their employment is not, by any means, free from danger and abuse. The greatest care and discrimination should, therefore, be observed in the selection of suitable cases.

*Indications*—

(*a*) Acute anteflexion.

(*b*) Stenosis of os uteri internum as a result of acute anteflexion, and in some cases of acute retroflexion.

(*c*) Stenosis of os uteri externum with a narrow cervix.

(*d*) Dysmenorrhœa. } Resulting from
(*e*) Sterility. } foregoing.

*Contra-Indications*—

(*a*) When the uterus or its annexa are the subjects of acute inflammation.

(*b*) Old standing perimetric adhesions.

Fig. 26. Simpson's Stem.

The varieties of the intra-uterine stem pessary are numerous. It is sufficient to describe the original typical form, viz. :—

That of Simpson.

It consists of a stem of copper with a bulb at the end. The stem is of sufficient length to pass along

the cervix almost to the fundus uteri, and the bulb is intended to lie at the os uteri externum. The bulb and stem are perforated to admit a sound or stilette. A stem pessary composed of two metals, zinc and copper, was suggested by Simpson in cases of amenorrhœa as a uterine stimulant by its supposed galvanic action, and in many cases of scanty menstruation it is of great value.

*Method of Introduction—*

Place the patient in the ordinary position on her left side.

Pass the sound, and note the degree of displacement and contraction.

*If slight,* and the vagina lax and roomy, pass the stem up to the cervix, and guide it into the os with the two first fingers of the right hand, push it onward with the thumb, and then, by turning the palmar surfaces of the fingers to the pubes and pressing up, and at the same time causing the patient to bear down, the stem will slip in.

Where the displacement and contraction are *more marked,* place the stem on a stilette, or on the end of the sound, and introduce it on the same principle as the sound.

*In bad cases—*

Expose the os with a Sims speculum. Drag down the anterior lip of the cervix with a hook, and while the hook is held in the left hand, introduce the stem mounted on a sound or stilette with the right.

Previous depletion of the cervix is useful in some cases, but, as a rule, it is unnecessary.

*Precautions—*

Before introducing any stem, it is desirable that the sound should be passed once or twice to see how the uterus bears interference.

Remove any congestion or induration of the cervix, as far as possible.

The patient should always rest in bed for a day after the introduction of a stem.

She should be examined frequently to see that the stem does not slip out. The pessary should be removed occasionally, and replaced if required.

If the instrument is borne without pain, it should be worn continuously for four or five months.

Instruct the patient to use a vaginal wash night and morning.

Amongst the objections urged against this form of pessary is its tendency to slip out of the uterus.* This difficulty has, however, been overcome by the various ingeniously contrived stems of Wright, Chambers, Wynn Williams, Bantock, and others. Each of these instruments has some special feature, which is claimed as an advantage by its inventor. A detailed description of each is, however, superfluous, as the principle involved in the simple stem pervades them all, with more or less elaboration. Any of those just mentioned answers the purpose of a stem pessary remarkably well.

Greenhalgh's flexible intra-uterine stem consists, as in the accompanying diagram, of a tube of caoutchouc, large enough to admit an ordinary sound. At its

* The simple stem can be retained in position by the introduction of a vulcanite shelf pessary beneath it.

upper extremity there are four slits, through which the uterine secretions escape.

*Method of Introduction—*

The sound is passed along the tube of the pessary, and both are introduced into the uterus. The lower extremity, or shield, of the pessary is then pressed against the cervix, and the sound withdrawn.

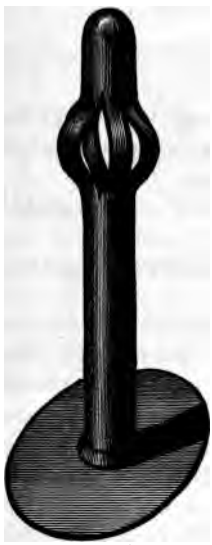


FIG. 27.
Greenhalgh's Stem.

*Its advantages—*

It is soft, and thus easily accommodates itself to the shape of the canal.

It does not readily slip out.

It is not liable to inflict any injury.

It permits sexual intercourse.

For dysmenorrhœa, arising from acute retroflexion or anteflexion, this is certainly a most useful pessary.

*The risks attending the use of Pessaries are—*

Vaginitis.
Metritis.
Parametritis.
Hæmatocele.
Perforation.
Perimetritis.
Ovaritis.

## CHAPTER III.

## *URETHRA AND BLADDER*

---

### Use of the Catheter

*Indications for its use—*

1. For emptying the bladder previous to operating.
2. In retention of urine arising from—
   - (*a*) Pressure of displacements or tumours acting mechanically on the urethra or the neck of the bladder; *e.g.*, gravid retroversion.
   - (*b*) Injuries or growths acting reflexly, as, for example, a torn perinæum after labour, or a urethral caruncle.
   - (*c*) Injuries or contusions during labour, acting directly or by subsequent inflammation.
   - (*d*) In some nervous affections.
     *N.B.*—In hysterical women the catheter should never be employed if its use can possibly be avoided.
   - (*e*) Direct obstruction within the tube of the urethra from foreign bodies, such as

calculi, or in stricture of the urethra. The latter, owing to the shortness, larger bore, and greater dilatability of the female uretha, is very rare.

The student will thus observe that in the female retention of urine is brought about by causes altogether external to the bladder.

Although for the relief of the urgent symptoms passing a catheter is sufficient, yet it is important clinically to remember, that the retention of urine is but a symptom, and points to some condition within the pelvis, for the diagnosis of which a vaginal examination is necessary. In all cases of retention such an examination ought to be made. When any difficulty exists in accounting for it, a visual examination should be insisted on. It is a sound rule before giving a definite verdict on any pelvi-abdominal tumour to empty the bladder.

In cases of cystitis where the object is to obtain a constant drain of urine from the bladder, the Goodman Skene self-retaining catheter will be found useful. It can be worn by the patient either in her bed or when pursuing her ordinary employment.

The ordinary female silver catheter is objectionable. It is better and safer to use a gum elastic male catheter, Nos. 8 or 10.

*Method of Introduction—*

Remove the stilette.

Place the patient on her back, with the knees well drawn up, and a convenient vessel close to the parts.

Oil the catheter, and take it in the left hand. Pass

the right hand beneath the clothing under the thigh, and introduce the index finger into the vagina. Raise the finger gently upwards and forwards under the arch of the pubis until the pouting rim of the meatus urinarius is felt.

Sometimes a fold of mucous membrane is mistaken for the meatus. If any doubt be entertained, a little gentle pressure will cause the fold to disappear, while the rim of the meatus will become more distinct.

The left hand is now introduced over the patient's thigh, and the point of the catheter slipped on to the palmar surface of the right index finger. By a little gentle manipulation it will be easily guided into the meatus. The thumb is then placed over the end of the catheter, and the instrument slid into the bladder.

It is seldom necessary to expose the patient.

*Difficulties—*

1. If the parts are flaccid and lax, the meatus is sometimes difficult to detect.
2. Sometimes one of the mucous lacunæ in the neighbourhood of the meatus is so enlarged as to admit a small catheter.
3. In retroversion of the gravid uterus the student should remember that the meatus is drawn upwards, the direction of the upper part of the canal drawn backwards and downwards.
4. The meatus and urethra are sometimes displaced by ovarian and fibrous tumours.
5. Occasionally it is swollen and tender after operations and tedious labours.
6. A careless and clumsy operator may pass the catheter into the vagina.

## Dilatation of the Urethra and Neck of the Bladder

*Indications*—

1. *Diagnostic.* 2. *Therapeutic.*

1. DIAGNOSTIC.
   - (*a*) For examination of the anterior surface of the uterus.
   - (*b*) Growths or tumours in the vesico-vaginal septum.
   - (*c*) For the diagnosis of inversion of the uterus.
   - (*d*) Examination of calculi or foreign bodies.
   - (*e*) Suspected absence and deformity of the uterus.
2. THERAPEUTIC.
   - (*a*) Extraction of foreign bodies, *e.g.*, calculi.
   - (*b*) Cure of cystitis, either by simple dilatation alone, or by the subsequent application of caustics or astringents.
   - (*c*) Cure of fissure of the urethra.
   - (*d*) Removal of tumours from the surface of the bladder.

*Methods*—

1. Gradual, by means of—
   Graduated bougies or laminaria tents.
2. Rapid, by means of—
   Dilators, such as those of Weiss, Holt, Molesworth, or Simon's hard rubber conical plugs.

The method which I should recommend for adoption in the majority of cases is the latter, by the use of Simon's hard rubber conical plugs.

*The Operation—*

Place the patient on her back, in the lithotomy position.

Induce complete anæsthesia, as the operation is very painful.

Three slits should be made in the rim of the meatus, two laterally above, and one below.

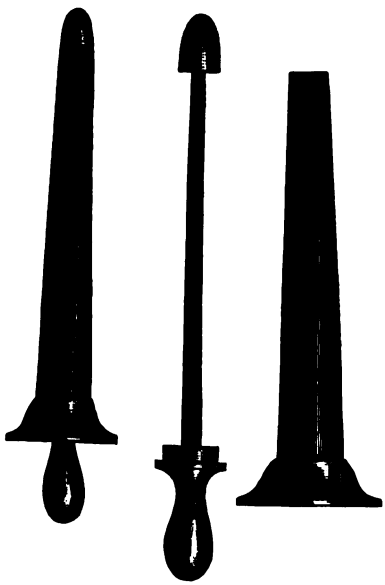


FIG. 28.—Simon's Hard Rubber Conical Plugs.

The conical plugs should then be introduced, beginning with the smallest, and gradually increasing the size until the canal has been sufficiently dilated to admit the forefinger.

The forefinger should now be introduced, and the cavity of the bladder explored. This will be accomplished the more satisfactorily if the median finger is at the same time introduced into the vagina.

Where it is desired to palpate the anterior wall of the uterus through the posterior wall of the bladder, an assistant should grasp the cervix with a volsella, and drag down the uterus, so as to bring the fundus within easy reach of the examining finger.

The examination can be rendered the more complete if this be combined with a bi-manual examination.

*Limits of Dilatation*—

In women over 20 years of age the urethra can be dilated $\frac{3}{4}$ of an inch in diameter. In women between 15 and 20 years of age, a little over $\frac{11}{16}$ of an inch. In girls between 5 and 11 years of age, $\frac{5}{8}$ of an inch. Speaking generally, the female adult urethra can with safety be dilated so as to admit the forefinger; and the urethra of the child, so as to admit the little finger. These limits are within the bounds of safety. Of course, when necessary, these limits can be exceeded, but there is danger of injuring the peri-urethral tissues, and causing permanent incontinence.

*Risks*—

1. Incontinence. This danger is apt to be underrated, especially by those who advocate dilatation as a cure for cystitis. In the minor degrees of dilatation it is not likely to occur.
2. Laceration of the tissues round the urethra.
3. Inflammation in the peri-urethral tissues. By the use of Simon's plugs, the two latter dangers are reduced to a minimum.

## Washing out the Bladder, and the use of Medicated Vesical Injections

*Indication—*

Specially in cystitis.

*Instrument to be used—*

A gum elastic or hard rubber male double-channelled catheter. The metallic double-channelled catheter is objectionable, because the openings in the end of it are sharp, and the mucous membrane of the empty bladder flaps down on them, and is likely to be wounded as the catheter is withdrawn.

It is sometimes better to have the end of the catheter perforated by several small holes than by the large ones.

To what may be called the afferent or supply channel is attached a Higginson syringe, whilst from the efferent channel a piece of common india rubber tubing is carried into a convenient vessel at the side of the bed. Having expelled all air from the apparatus, the catheter is introduced into the bladder, and a continuous stream of water slowly injected. Warm water is sufficient for simply washing out the bladder, but the addition of a little chlorate of potash or common salt renders the water more like the ordinary secretion.

It is very important that the fluid be injected slowly, regularly, and without any jerking. Any sudden distension gives pain, and is apt to cause injury to the organ.

As the contents of the bladder are expelled with force, it is therefore important to prevent the empty bladder from contracting on the end of the catheter; for that reason a certain quantity of the fluid should be

allowed to remain in the bladder, or else the last should be allowed to escape very slowly.

*Medicated Vesical Injections—*

These should only be employed after the bladder has been washed out in the way just described.

It is safer to inject with a graduated syringe attached to the double-channelled catheter.

Be careful—

1st. To inject very slowly.

2d. To inject only one ounce at a time; this, however, may be repeated three or four times in succession.

The astringent and alterative injections in ordinary use are, nitrate of silver, sulphate of zinc, tannic acid, acetate of lead; two grains of each in an ounce of warm water. The strength may be gradually increased. Care should be taken not to make the injection strong enough to cause much pain. If there be pain after the injection, or when there is ulceration of the bladder accompanied by pain, two grains of morphia in an ounce of water make a very useful anodyne lotion; or chloral hydrate, fifteen grains to the ounce, may be used with good effect.

In cases where the urine is alkaline, or offensive from long retention, two minims of nitro-hydrochloric acid in an ounce of water should be used.

Sometimes a strong solution of nitrate of silver, twenty grains to the ounce, is useful in obstinate cases. If, however, a solution of this is used, only a few drops, ten or fifteen, should be injected.

In some of the worst cases, in order to obtain entire rest to the bladder, an artificial vesico-vaginal fistula

has been formed, but such an operation does not fall to be discussed here.

### Removal of Urethral Caruncle

Where the caruncle is large and very sensitive, anæsthesia will be found necessary.

Grasp the excrescence gently with a pair of artery forceps, as it is very friable, and, with sharp-pointed scissors, snip it carefully off.

The surface is then to be cauterised with a hot wire. The thermo-cautery makes a very good substitute both for the scissors and wire.

Simple application of caustic, such as nitrate of silver, is of no use for true urethral caruncle.

### Urethral Venous Angioma

Consists of a mass of projecting venous tissue associated with the urethro-vaginal wall.

It is distinguished from caruncle by its want of sensibility.

Its treatment is identical with caruncle.

### Prolapsus Urethræ

Is comparatively rare, and usually met with in adults of weak constitution, though sometimes also in children. It consists of a partial eversion of the urethral mucous membrane, which becomes red and irritable, causing much inconvenience. It is distinguished from caruncle by the fact that it completely surrounds the orifice.

*Treatment*—

(*a*) Draw it down with a pair of dressing forceps, and cut it off with curved scissors. The

hæmorrhage is controlled by means of perchloride of iron.

(*b*) Or a catheter may be introduced, and the protrusion having been well drawn down, is surrounded by a stout ligature, which is tightened against the catheter. The latter is left in, and the tissue allowed to slough off.

## Urethral Injections

*Indication—*

In gonnorrhœal urethritis, with or without implication of the vesical mucous membrane, benefit may be derived from the use of urethral injections in the earlier stages; and of medicated urethral bougies in the later.

*Application. Injections—*

The best instrument for the purpose is an ordinary glass or vulcanite male syringe of ½oz. capacity. It is filled and inserted in the ordinary way.

The following among other solutions may be employed:—

℞ Aluminis, gr.xii.
Morphiæ, gr.i.
Aquæ, ℥vi.

℞ Zinci Sulph., gr.xii.
Aquæ, ℥vi.

℞ Hydrastiæ, ℥i.
Mucil. Acac: ℥iv.

*Bougies—*

In the later and more chronic states when a thin discharge is kept up, generally associated with an

excoriation in some part of the canal, the introduction of a crow quill bougie of cocoa butter, containing ½ gr. of zinc or lead chloride, is useful.

MEDICATED BOUGIES

(SOLUBLE)

*Diameter similar to a No. 9 Bougie or Catheter*

| | |
|---|---|
| Acetate of Lead | ⅝ and ½ a grain |
| Nitrate of Silver | 1, ½, and ¼ grain |
| Tannic Acid | 2 grains and 1 grain |
| Extract of Belladonna | 2 grains |
| Extract of Opium | 2 grains |
| White Bismuth | 10 grains |
| White Bismuth and Acetate of Lead | 10 grains and ½ grain |
| Perchloride of Iron | 1 and ⅝ grain |
| Exsiccated Sulphate of Zinc | 1 grain |
| Gallic Acid | 1 grain |
| Sulphate of Copper | ½ grain |

## Vesical Calculus

For reasons which have been already explained, calculus in the female bladder is easily enough diagnosed. It is, at best, comparatively rare, because, owing to the shortness and large calibre of the female urethra, a small stone very readily escapes during micturition.

The *Removal* depends on the size—

1. If small, the urethra can readily be dilated, and the stone removed by a pair of forceps, or adopting the plan described by Ogston, as shown in the accompanying woodcut. Introducing two fingers into the vagina, and turning their pulps against the bladder wall, the calculi can readily enough be brought down to the neck of the bladder, the fingers in the vagina can

without difficulty retain the calculi there, and force them one by one along the dilated urethra until they appear at the meatus urinarius. They can then be easily enough expelled if their size permit.

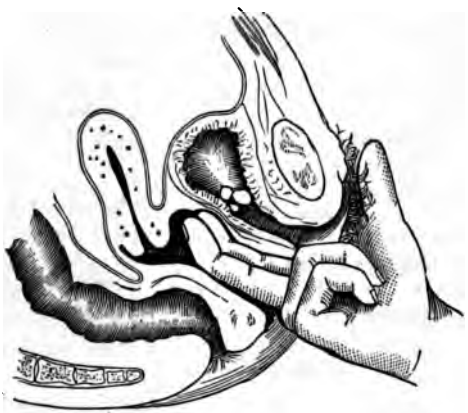


FIG. 29.

2. If it be larger than, say, the size of the tip of the index finger, then any attempt to remove it in the way just mentioned is not to be recommended, as it might prove most disastrous, causing permanent incontinence of urine. The size of the stone can be guessed easily enough by a careful bi-manual manipulation. For a soft stone of moderate size lithotripsy is the most feasible operation. This requires no special description. The operation is to be performed in the ordinary way, and with the usual

precautions. One point must, however, be noticed, viz., if care is not taken the operator is very apt to wound the bladder wall, and in seizing the stone special attention must be paid to this point. The bladder should always be filled with water to render the possibility of this accident as distant as possible.

3. If the stone is large, more especially if it is of hard consistence, then, unquestionably, lithotomy offers by far the best chance. Vaginal lithotomy is an easy and safe operation, and in cases where there is cystitis it is by far the best operation, because not only can the stone be easily removed, but, if the vesico-vaginal fistula is left open, the bladder gets complete rest, and the cystitis is cured.

The *Operation* is simple—

Introduce a sound in the bladder, and turn its point downwards and backwards towards its base. Make the point of the sound strike the bladder base a little beyond the neck. Then snip open the bladder and vaginal wall with a pair of scissors on the sound.

Introduce one blade of the scissors into the aperture, and cut up in the median line towards the cervix.

Thus the neck of the bladder is avoided.

After the removal of the stone the bladder should be most thoroughly washed out.

The nozzle of the syringe, with or without a catheter, should be introduced along the urethra, and while the edges of the fistula are kept apart by the index finger, a cleansing stream should be passed through the bladder.

The wound should then be brought together by silver sutures, and treated as an ordinary case of operation for vesico-vaginal fistula.

It must be borne in mind that it is exceedingly common in the female for a foreign body to form the centre of the calculus. Wires, hair-pins, etc., are not unusual nuclei. They frequently lie transversly in the bladder, the points embedded in or penetrating the walls. Such calculi often cause incontinence; a simple calculus seldom does.

It is only after the urethra has been dilated and the finger introduced that the nature of the calculus is recognised. The sound alone gives no help. The best manner of dealing with such is that described by Ogston. Crush the calculus, and then with the finger hook down the centre of the wire. In this way the wire bent in itself may sometimes be extracted with the bend foremost. More usually the wire breaks, and then the two ends can easily enough be removed by dressing forceps.

## Incontinence of Urine from Gaping Urethra

This is a very troublesome affection, associated with a certain form of incontinence of urine. This incontinence is not constant, but only after exertion, such as coughing. Sometimes it occurs on the slightest exertion. From the excoriation of the thighs which result, as well as from the patient's underclothing being constantly wet, it is a source of great annoyance. It most usually occurs in middle aged multiparæ, who have borne large families. It does not, I fear, admit of much local treatment. Iron, strychnine, and ergot, are the best remedies internally. Locally, benefits will be derived from the use of carbolic acid or nitric acid, carefully applied along the tube, but in this form of incontinence of urine, as indeed in all forms, where

there is no solution of continuity, and when the incontinence depends either on paralysis of the bladder itself in the sphincter vesicæ, or relaxation of the urethra, the best results will be obtained from Faradisation of the bladder.

### Faradisation of the Bladder

*Apparatus required—*

1. A ½ pint bichrome cell, with sliding zinc plate for regulation of the current.

2. A small Faradic coil.

3. A galvanic bougie, made by carefully fitting a small brass cap to the end of a No. 8 black rubber catheter. From the cap a thin copper wire passes

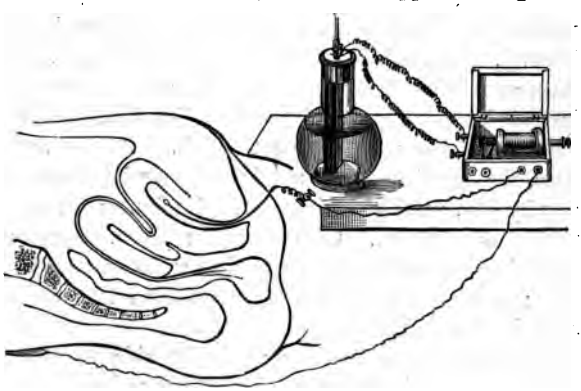


FIG. 30.

through the catheter, and is fixed by a wooden plug at the other end, from which it projects a few inches.

4. A copper plate, 3 inches in diameter, to serve as an external electrode.

5. Silk or gutta percha covered wire for connections.

The *treatment* is carried out in the following way:— The battery and coil being connected, the bougie is introduced into the bladder, at first just within the neck. The wire is connected to one terminal of the coil. The moistened copper plate is applied over the sacrum, and connected with the other terminal. The rod attached to the zinc plate is then gently depressed, until the lower end of the plate just touches the solution. The current so generated is quite sufficient for the first application. It ought to be continued for ten minutes, after which the zinc is pulled up to stop the current, and the bougie then withdrawn. The application should again be made after twelve hours' interval, and should be repeated twice daily. After three or four applications the current strength may be increased gradually by depressing the zinc, and by pulling out the regulator of the coil. At the same time, the duration of the application may be increased day by day, until a maximum of 30 minutes for each sitting is obtained. Care must be taken, however, that the current is not increased so as to cause actual pain; nothing but harm can result from the use of anything beyond a moderate current.

As the bladder becomes gradually able to retain urine, the bougie ought to be introduced with the organ as full as possible. The current is thus better diffused, and more easily borne by the patient. It is of importance that the current should be carefully applied to the sphincter, and for this purpose the bougie should be introduced just within the bladder, and its

position determined by vaginal examination. It will also be found of benefit if the copper plate be placed during every third or fourth application on the abdomen, just over the symphysis pubis.

In certain cases the bladder is so extremely sensitive as to render the weakest current intolerable. The current may be conveniently applied and regulated by being passed through the body of the operator. To effect this, the copper plate is applied and attached to the coil as described. The sponge holders supplied with the coil are then connected, one with the other terminal, and the other to the bougie. They are then held by the moistened hands of the operator, one in each, and by this means his body becomes part of the circuit, and the current can be estimated and regulated accordingly.

While benefit is usually experienced after three or four sittings, the treatment ought to be persistently followed for two or three months.

## Vesico-Vaginal Fistulæ

The sites of these fistulæ vary. They may be—

1. Utero-vesical.
2. Vesico-utero-vaginal.
3. Vesico-vaginal.
4. Urethro-vaginal.

The history of this distressing condition does not fall to be discussed here, but no one can make any reference to the subject without mentioning the name of Marion Sims, to whose genius the profession is indebted for perfecting the operation. After him Emmet, Bose-

man, and Simon have done much to bring the operation to a state of perfection which renders failures exceptional.

### *Causes*

The causes of these fistulæ are to be found usually in delayed labour. This is conclusively shown in Emmet's tables. Where timely interference with forceps is not had recourse to, these fistulæ are very apt to form, owing to sloughing of the tissues from long continued pressure. Out of 202 cases recorded by Emmet, 171 were the result of child-birth. Such fistulæ sometimes arise from accidental causes, *e. g.*, stone, broken catheters, pessaries, etc., but such are comparatively rare.

### *Symptoms and Signs*

An involuntary flow of urine immediately or soon after labour.

The constant passing of urine excoriates and ulcerates the parts. The odour from the patient is most offensive, her health deteriorates, and after a time her condition becomes truly deplorable.

If the opening is large it will be readily noted by a catheter passed into the bladder. The catheter will easily be felt by the finger through the rents in the vaginal wall. Experience with a Sims' speculum, and judicious use of the tenaculum, will bring even a small fistula into view. This is difficult where the parts are tender and much excoriated. By injecting milk or coloured fluid into the bladder, and carefully watching its exit by the vagina, the presence of a vesico-vaginal fistula can be determined.

*Preparatory Treatment*

As the labia, vagina, and thighs are much excoriated and abraded, and often deeply ulcerated, the first indication is to have the part carefully cleansed.

Hot water vaginal injections, as well as warm sitz baths, are most important.

These not only serve to keep the parts clean, but give them a healthy tone, and tend to relax adhesions.

Over the abraded vaginal mucous membrane there is often a very copious offensive phosphatic deposit. This must be carefully and gently removed, and the surface touched with a solution of nitrate of silver.

Frequent vaginal douching—many times daily—must be kept up for some weeks, or even longer. So much importance is attached to this by Emmet, that he says, "My experience in the use of hot water injections leads me to believe that if they be properly employed, many of these openings would close spontaneously, and in every instance the sloughing process would be arrested." The urine, which is phosphatic, should be kept acid. This is maintained by Emmet by the use of the following prescription—

| | | |
|---|---|---|
| ℞. | Acid: Benzoic - - - | ʒii. |
| | Boracis - - - - | ʒiii. |
| | Aquæ - - - - | ℥xii. |

Sig.—One table-spoonful in a wine glassful of water three or four times daily.

This must be accompanied by the free use of diluents, so as to prevent the urine being irritating. The parts should be well oiled from time to time for the same purpose.

On cleanliness, the free use of hot water, and healing of all abrasions, mainly depends the success of the operation. The great point is, before operating, to get the indurated edge of the fistula and the surrounding parts in a healthy condition. Neither time nor trouble should be spared in attempts to gain this end.

When the tone of the parts has been restored, then the patient should be carefully examined. Placing the patient in the usual Sims position the fistula should be carefully exposed, and the sides caught by tenacula, and the degree of tension and contraction at various points estimated in this way.

Small cicatricial bands can be easily overcome by snipping with a pair of scissors at the time of operation.

When the contraction is of a greater extent, the vagina must be opened by gradual dilatation by means of Sims' dilator.

The dilator is retained by means of a T bandage. The pressure should be carefully adjusted. It should never at any time be excessive, so as to produce sloughing.

*Time for the Operation*

The week after the cessation of the menses is the time to be selected for this, or indeed for all operations on the human female, for it must be borne in mind that the menstrual molimen affects the whole system of the woman, and that it is during the menstrual ebb that all operations should be undertaken. It must be further noted that no operation should be undertaken until the patient has entirely recovered from the effects of parturition, and until the process of involution is complete. It is best to allow the fistula to assume definite

dimensions before closure is attempted, for it sometimes, though rarely, occurs that, when the parts are carefully attended to, the fistula cicatrises and closes spontaneously.

*The Operation*

(*a*) POSITION OF PATIENT—

On the left side, accurately in the Sims' position already described. In some cases the lithotomy position is the more convenient. The choice of position will depend entirely on the site of the fistula, and the

FIG. 31.
Fistula exposed, edges being pared. (*Emmet.*)

care with which it can be exposed. That position should, of course, be assumed for the operation which exposes the fistula most distinctly. A good light is absolutely essential, and unless this is obtained the

operation will be most unsatisfactorily performed. The bowels should, of course, be previously cleared out by an enema.

Anæsthesia should always be employed, although Emmet says that the use of a grain of opium previous to the operation is often sufficient.

FIG. 32.
Edges pared, sutures in position. (*Emmet.*)

The bladder should then be examined by the sound in order to detect the presence of a stone, for it has repeatedly happened that, after the cure of a vesico-vaginal fistula, the operation of lithotomy has had to be performed in order to extract a stone of considerable size.

(*b*) ASSISTANTS—

Four are generally required. One holds the Sims' speculum in position, a duty which involves a consi-

derable amount of steadiness and endurance; a second attends to the sponge, carefully removing all blood, as it accumulates, by small sponges mounted on handles at least nine inches long; a third has entire charge of the various instruments; and a fourth administers the anæsthesia which, owing to the length of the operation, ought to be ether.

(*c*) EXPOSING THE FISTULA—

The nearer the fistula is to the vulva the easier it is exposed, and the operation is correspondingly simple.

With a Sims' speculum properly introduced and steadily held, no further exposure is often required. Sometimes retractions on each side of vulva are useful. If the fistula is high up then it must be dragged within view by means of tenacula fixed either to the vaginal walls or to the cervix, or two strong wires may be passed through the cervix, and by firm traction on them the cervix is pulled down and the fistula brought within view, and retained there. The greater attention paid to the thorough exposure of the fistula the greater will be the accuracy of the operation.

A great deal depends on the steadiness of the speculum assistant.

(*d*) THE OPERATION may be conveniently described under the following heads:—

1. Paring the edges.
2. Passing the sutures through them.
3. Approximating the edges.
4. Securing the sutures.
5. After-treatment.

*Paring the edges—*

Having seized the part furthest away with a tenaculum or forceps, put it well on the stretch, and with a pair of long curved scissors pare off a continuous strip. It is specially to be kept in view that in a great measure the success of the operation depends on the thoroughness with which the edges are freshened. For this reason it is always best, if possible, to make a single circular strip. When this is not practicable, bit by bit must be carefully snipped off until the whole edge is quite raw. The raw surface must extend from the mucous membrane of the bladder to that of the vagina, but special care must be taken not to wound the mucous membrane of the bladder, as such a wound is apt to occasion very troublesome, sometimes very serious, hæmorrhage. During the paring of the edges constant sponging must be kept up, as even slight hæmorrhage obscures the view, and may render the edges uneven.

*Passing the sutures—*

This is accomplished by means of curved needles held in strong forceps, or a needle-holder, or with long-handled needles. It is important not to introduce the needle through the mucous coat of the bladder, because the opening of one of the ureters might be stretched and close, and because a fistula might form in the course pursued by each needle. It is a point clearly insisted on that the sutures pass outside the edge of the wound, through the thickness of the muscular coat of the bladder close to the edge of the cut surface, stopping just short of the mucous membrane.

The number of sutures varies with the size of the fistula, but it is good practice to have them numerous and close together.

The sutures are generally made of annealed silver wire. The silver sutures can be passed at once, which is the better way when practicable. Some, however, prefer to pass silk sutures first, and with them to pull through the silver sutures.

*Approximating the edges—*

The edges, if the fistula is round, should be brought together in the direction of least resistance. They must be very carefully adjusted. Sometimes cicatricial bands prevent the thorough coaptation of the wound; and when these are discovered—and they are best made out by the finger—they should be cut or snipped through. Goodell remarks whenever the edges of a large fistula cannot be made to come together throughout their whole extent, close that end which is lax, and reserve the rest for another operation. The united portion will in a few weeks' time so stretch the tissues as to make the edges of the connected portion come together.

*Securing the sutures—*

The sutures are then twisted up to the edge of the wound by the fingers or forceps. Special care must be taken not to fix the sutures so tightly as to injure the tissues. It is very important that each suture, after it has been secured, should lie flat on the vaginal surface. It is worth while to turn the sutures alternately to opposite sides. This acts as a guide afterwards in their removal. Each suture should be cut short about half an inch from the fistula.

*Removal of sutures—*

Generally they are left in until the eighth or tenth day, or longer if union does not seem to be complete. Their removal is accomplished by seizing the twisted end with forceps, and making feeble traction on it until the loop emerges from the tissue into which it has sunk. Then with a pair of sharp pointed scissors the nearest side of the loop is clipped. As the suture is withdrawn, aided by a little counter-pressure by the scissors, it will continue to bind the parts until cleared. Each successive suture is treated in the same way until all are removed.

*After-treatment—*

The patient should be laid on her back, and then the bladder should be washed out, more especially if it contain blood. If this is left in it may cause considerable irritation, and may block up the eye of the catheter.

A catheter should then be introduced into the bladder and retained there. Either a Sims or a Skene-Goodman self-retaining catheter suits very well. A tube should be attached to the catheter to allow the urine to drain off as it is secreted. Emmet recommends a catheter made of block tin. Being flexible, its curve can be altered to suit each individual. The fundus of the bladder should not rest on the catheter. If it does, irritation is apt to be set up. The catheter should be five inches long before being bent. It should be frequently removed and cleansed; indeed, it is more convenient to have several, so that a second can be introduced immediately on the removal of the first.

Opium should be freely administered until the

stitches are removed, so as to constipate the bowels, and on the tenth day a dose of castor oil should be given. The diet should be nourishing and non-stimulating.

On the fourteenth or twentieth day, according to circumstances, the patient may sit up.

The catheter should be used for some time after.

During the whole time that the sutures are in position, the vagina should be carefully syringed out with hot water.

## CHAPTER IV.

## *CERVICAL APPLICATIONS*

### Depletion of Cervix

*Indications—*

1. IN acute parenchymatous metritis, when the cervix uteri is gorged and swollen with blood, accompanied by pain and sense of weight.
2. In acute endometritis.
3. In any case where the uterus, or its annexa, are acutely inflamed, and where pain is very marked.
4. In some cases previous to the introduction of intra-uterine stem pessaries.

*Contra-indications—*

1. If the congestion recur periodically.
2. In chronic inflammation where the cervix has become hard and indurated.
3. In perimetritis or parametritis.

*Methods*

1. Leeches.
2. Scarification.
3. Puncture.

### 1. Application of Leeches

Introduce a Fergusson speculum and expose the cervix uteri. With a piece of cotton wool on a pair of forceps, any secretion is to be carefully wiped away from the cervix until it is quite dry. If the cervix be at all patulous it is well to plug the os uteri with cotton, so as to prevent the entrance of a leech within the cavity of the uterus. Dry the leeches, and then placing them on a hollow sponge, push them along the speculum in front of the sponge. Three to six leeches are usually sufficient. Special care must be had to keep the speculum pressed firmly against the roof of the vagina, otherwise the leeches are apt to insinuate themselves between the speculum and the vaginal walls. This must be attended to throughout the operation. In from ten to twenty minutes the leeches which have fallen off should be removed, and those that are still adherent may be taken from the cervix by means of a pair of forceps.

Be careful to count the leeches after removal to see that none are left in the vagina.

Another, and much more elegant and safe, method of applying leeches is by means of leeching-forceps. These have a hollow in the blade, into which the body of the leech is placed, the head being left free. In this way the leeches can be applied successively through the speculum with greater accuracy, and each held to the lip of the cervix until it has bitten.

*Accidents*—

(*a*) Sometimes a leech escapes into the uterus through a patulous os. There need hardly be any

apprehension as to the result, because uterine action is immediately set up and the leech is expelled.

(*b*) As a rule the bleeding ceases of itself, but occasionally it continues so long that it becomes desirable to stop it. This can be done by injecting hot water into the vagina, or by introducing a speculum and touching the bleeding points with nitrate of silver, or perchloride of iron. Occasionally it may be necessary to have recourse to the vaginal plug.

(*c*) Urticaria, more or less severe and general, has been observed as one of the accidents.

After removal of the leeches the cervix will appear pale and exsanguine. The patient should remain in bed for a day or two, and a glycerine plug introduced from time to time. It is worth while to note here that, in some weak anæmic women, where depletion is hardly justifiable, the glycerine plug frequently applied makes an excellent substitute.

*Disadvantages—*

(*a*) The application of leeches causes pain in some cases to a very considerable extent.

(*b*) The free anastomosis between the internal iliac and the valveless veins in the pelvis is by no means favourable to the abstraction of blood by suction.

(*c*) Sometimes the leeches will not bite.

(*d*) They draw an uncertain quantity of blood.

### 2. Scarification

This consists in drawing a spatula-shaped knife across the cervix in several directions. From the superficial character of the incisions it is obvious that the amount of blood drawn must be insufficient. This method is, therefore, unsatisfactory, and not to be recommended.

### 3. Puncture

This is by far the most effectual and simple method of local depletion. A sharp lance-headed knife, with a long handle, is the proper instrument to use.

Fig. 33.—Lancet-shaped knife, for puncture of cervix.

The cervix is to be exposed with a Fergusson speculum, and two or three stabs on each lip of the os uteri are to be made, more or less according to the vascularity of the part. The knife should penetrate the cervix to the depth of $\frac{1}{8}$ to $\frac{1}{4}$ of an inch. The stabs should be made from below upwards, to prevent the blood from obscuring the surface. When the cervix is vascular it bleeds very readily, but where it is hard and dense i is difficult to withdraw a sufficient quantity of blood. The coagulum from each of the stabs should be wiped away so as to encourage the flow; or if the flow be scanty, a little tepid water injected along the speculum will encourage it. After sufficient blood has been withdrawn, which will be apparent from the pale appearance of the cervix, the blood and coagula should be washed out, and a glycerine plug introduced along the speculum

to the cervix, and allowed to remain there for six hours. Of course the patient should be kept at rest.

*Risks—*

There are few. It has been said that the vagina may be punctured, but this is very unlikely with ordinary care. Sometimes a varicose vein may be punctured or bitten by a leech, and the hæmorrhage may be profuse.

The advantages of this method are obvious.

1. Its rapidity. 2. Ease of performance. 3. Efficacy.

Various other instruments are in use for the application of leeches, as well as for scarifying and puncturing the cervix, but they are needless encumbrances. The simple method of puncture just described is the best.

## Application of Caustics to the Cervix Uteri

*Indications—*

1. Simple erosions of the cervix uteri, presenting the appearance of a granular, superficial, bleeding, varicose, fissured, or follicular surface, with a more or less superficial loss of tissue.
2. Syphilitic ulcerations.
3. Malignant disease.
4. Chronic inflammation of cervix uteri, with areolar hyperplasia.

In cases of simple superficial erosions or abrasion of the cervix uteri,

*Methods of Application—*

Expose the cervix by means of the Fergusson speculum; with a piece of cotton wadding carefully wipe off

all the tenacious mucus which almost invariably covers the cervix.

Gently touch the surface over with a piece of solid *nitrate of silver*, carried along the speculum to the cervix on a porte caustique, or with camel's hair brush soaked in *carbolic acid* or *iodine*.

Apply a glycerine plug through the speculum to the cervix.

The slough formed by nitrate of silver is but slight, and usually falls off in five or six days.

Where the erosions are deep and the os uteri gaping, *nitric acid* is indicated.

Having exposed the cervix with a Fergusson speculum, the uncovered end of a match is to be dipped in the acid, and then with a forceps passed up to the cervix and pressed against the affected parts.

A glass rod, a piece of cotton wadding dipped in the acid, or a brush will answer the purpose of application very well; only, the soft wood absorbs the acid and prevents it dropping about.

To prevent the action of the acid on the vaginal walls, a small quantity of an alkaline solution ought to be injected along the speculum.

*Acid nitrate of mercury* makes an excellent application where the sore is deep and ragged, or where it is specific. It is applied similarly to nitric acid.

*Perchloride of iron* is very useful, where, after the application of the stronger caustics, some of the granulations remain swollen and easily hæmorrhagic. It is simply applied through a Fergusson speculum, by soaking a piece of wadding in a saturated solution of

the *perchloride of iron* in glycerine, and carrying it up to the cervix with a pair of forceps.

In cases of epithelioma of the cervix, where a large bleeding surface is presented, this solution applied gently will succeed, temporarily at least, in checking the hæmorrhage.

In areolar hyperplasia of the cervix *potassa fusa* or *potassa cum calce* fused in sticks is indicated.

Expose the cervix well with a tubular speculum. See that no part of the vagina is included. Pack a little cotton wadding between the cervix and the speculum. Remove carefully any secretion adhering to the cervix. Take a piece of the potassa cum calce in a uterine forceps, and rub it for a few seconds against the portion you wish to destroy. A dark appearance will be immediately presented. Syringe the surface through the speculum with acetic acid and water, then introduce a pledget of cotton wool, soaked in glycerine, against the os.

If a string be attached to the cotton wool, the patient can remove the plug in the course of five or six hours.

No further treatment is required for ten days, when the granulating surface can be touched with some mild caustic.

The potassa cum calce is better than the potassa fusa, as it is not so caustic, and does not run.

In malignant disease of the cervix *bromine* is supposed to exercise a special influence. It is thus applied:—One part of bromine is dissolved in five parts of rectified spirits. Care should be taken not to inhale the fumes, for they are very irritating. Introduce a Fergusson speculum. Pass up a small pledget of

cotton wadding soaked in the solution up to the cervix uteri. This is covered with a small piece of gutta-percha tissue. Then a large pledget of cotton wadding soaked in an alkaline solution is introduced behind. This will neutralise any excess of bromine. The application is left *in situ* six to ten hours. It is then removed, and hot water injected into the vagina.

In the intervals of the application of all forms of caustic, the vaginal douche should be freely used.

## Actual Cautery

*Indications—*

1. In chronic enlargement and induration of the cervix.
2. In malignant disease of the cervix.

By far the most convenient form is the elegant and useful thermo-cautery of Paquelin. The platinum button is first of all brought to a red heat by being held in the flame of an ordinary spirit lamp, and it retains its heat so long as it is kept in contact with the vapour of petroleum. This Paquelin's apparatus accomplishes.

*Method of Employment—*

The cervix is to be exposed by means of a tubular speculum; one made of wood or ivory is to be used, as they are bad conductors of heat. Care must be taken to embrace the cervix accurately, so as not to include any of the vaginal wall.

The surface of the cervix is then to be wiped with a piece of cotton wool, so as to remove any secretion.

While the speculum is held accurately in position, the platinum button, brought either to a dull red heat

or heated to whiteness, according to circumstances, is carried up to the cervix, and brought gently in contact with it at different points.

*Mode of Action—*

If the cauterisation be slight and superficial, the white eschar generally falls off in two or three days, and leaves a healthy granulating surface beneath. The result is a change in the vitality and nutrition of the part. If the cauterisation is longer continued, and consequently deeper, there is considerable destruction of tissue, and the eschar is longer in falling away.

In the one case it is sufficient to leave the cautery in contact with the affected surface for one or two seconds only; in the latter, in order to attain the end in view, five to ten seconds will not be too long.

*Time to apply—*

Like every other operation, the actual cautery should be applied between menstrual periods.

*Contra-Indications—*

1. Never when there is acute inflammation, either of the uterus itself or its annexa, or any neighbouring pelvic inflammation.
2. When, in malignant disease of the cervix, the line of demarcation between morbid and healthy tissue is not well marked. When the disease has spread into the cavity of the uterus, or to the surrounding tissues.
3. It is not desirable to use the actual cautery during pregnancy.

*Risks—*

1. If carelessly used it is apt to set up peritonitis.
2. Permanent closure of the os uteri.

3. Cicatricial bands are apt to form between the cervix and the vaginal roof.

*After-Treatment—*

Immediately after the cauterisation, a stream of cold water should be injected through the speculum into the vagina. After the fall of the eschar, the granulating surface may be touched from time to time with a mild caustic.

Care must be taken during the cauterisation that the os be kept patulous by the occasional passage of a bougie.

## Amputation of the Cervix

This operation is indicated under two sets of circumstances—

1. In circumscribed malignant disease.
2. In hypertrophy of the vaginal portion of the cervix.

In cases of malignant disease, where a distinct line of demarcation is formed, the best method of operating is by means of the galvano-caustic wire. The operation is thus performed: anæsthetise the patient, and then place her in the ordinary lithotomy position. Seize the cervix with a volsella gently, remembering that the tissue is very friable. Special care must be taken that the volsella simply steadies but does not in any way drag on the cervix, as any traction is very apt to involve a portion of the posterior *cul-de-sac*. The loop is then passed round the cervix, and gradually drawn tight, and when this is accomplished the wire is rendered incandescent by being connected with the battery, and while the wire is maintained at a white heat, the

loop is gradually tightened and the cervix slowly cut through. Care must be taken not to perform the amputation too rapidly, otherwise hæmorrhage is apt to occur. This can be averted by avoiding the rapid tightening of the loop and the use of too powerful a current.

After removal of the mass, the stump should be examined to see that all portions have been removed, and that there is no hæmorrhage. The vagina is then syringed with carbolised water, and if there be any hæmorrhage this can be checked either by the use of the actual cautery or by perchloride of iron. A piece of lint soaked in carbolic oil should then be introduced up to the stump, and the vagina gently packed. This dressing should be renewed daily, and the vagina syringed out with carbolic wash.

This operation is unquestionably the safest. It lessens the risk of absorption and of hæmorrhage, and if no traction is made upon the cervix, the risk of including the vaginal walls is very small. A bougie should be passed from time to time.

In cases of hypertrophy of the cervix, although amputation is not often required, yet, under certain circumstances, where it is excessive or associated with prolapsus, the operation just described may be employed with advantage.

Removal of the cervix by means of a bistoury is accomplished in the following manner. Having anæsthetised the patient, place her in the lithotomy position Expose the cervix with a speculum and spatulæ, seize the cervix with a volsella, then passing a firm india-rubber ring over the volsella on to the cervix, so as to

restrain hæmorrhage, push a handled needle through the cervix from below upwards. The needle may be straight or curved according to circumstances. Having threaded the needle with a long wire suture, it is drawn back. Similar sutures are introduced on either side of the central one.

The cervix is now split into an anterior and posterior lip. The division is carried as far up as the sutures, which are exposed. The sutures are now hooked up, and then divided, there being now three in the anterior and three in the posterior. The bulk of the anterior lip in front of the suture is then removed, and subsequently the posterior lip. One or two sutures are then passed through so as to close the sides of the cervix; the sutures are then twisted and left long enough to project down to the vulva. They are wrapped in a little bit of cotton wool, and allowed to remain in for a week or ten days. The sutures are then removed by placing the patient in the lithotomy position, the ends of the wires are then freed, traction is made on each in turn, and the knot cut through with scissors.

The knife and ecraseur are not desirable methods of removing the cervix.

## Incision of the Cervix

*Indications—*

1. Stenosis of the os externum, causing—
   *a.* Endocervicitis.
   *b.* Dysmenorrhœa.
   *c.* Conical cervix.

*Instruments—*

The operation may be effected—

1. With the hysterotome.
2. With the scissors.

The use of the hysterotome, invented by Sir J. Y. Simpson, is now almost entirely abandoned, on account of the difficulty in determining the extent and depth of the incision. The instrument most usually employed is the scissors, and those of Küchenmeister are generally preferred.

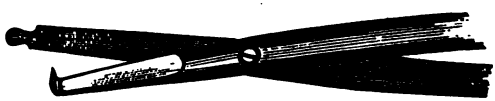


FIG. 34.—Küchenmeister's Scissors.

*The Operation—*

The patient is placed on the left side, and Sims' speculum is introduced. Anæsthesia is not necessary. The cervix is steadied by a tenaculum, and the probe pointed blade of the scissors is introduced within the os until the hook grasps about half an inch of the external cervical surface; the blades are then closed, and the operation is repeated on the opposite side of the canal. The cervical mucous membrane is thus exposed, and if endocervicitis exists, any desired application (nitric or carbolic acid, iodine, etc.) may be made. The canal is then carefully plugged with a pledget of wool soaked in carbolised vaseline, or with salicylic silk, in order to prevent union of the incised surfaces, and to check any tendency to secondary hæmorrhage. The vagina should then be plugged

with carbolised wool. The tampons are removed next day, the cervical plug being carefully withdrawn; the vagina is syringed with hot water, and if any tendency to hæmorrhage shows itself, the tampons should be re-introduced. After the first day a vulcanite or metallic bougie should be introduced daily until all tendency to union of the incised surfaces has ceased.

## Laceration of the Cervix Uteri

To Emmet is due the credit of having specially drawn attention to the importance and treatment of this lesion. There are two forms of the condition: the one is a simple fissure, the result of a cicatrix formed by the healing of a laceration; in the other the mucous membrane becomes everted, and what is called ectropion follows.

*Indications for the Operation of Trachelorrhaphy—*

It is desirable that these should be clearly understood, because the operation has been performed in the most trifling cases, and under conditions which were totally unsuitable for it.

Often in rents of the cervix there is no indication of any interference. A tear may be deep, bilateral, involving the whole length of cervix, up to the vaginal roof, and require no treatment whatever. It is the obvious or ascertained pathological influences of the lesion that should be the guide for interference: it should not be the extent of the tear. For example, if the tear is cicatrised, if there is no hyperplasia, if

there is no inflammation of the cervix or body of the uterus, then any operative interference would be unwarranted.

Again, the presence of parametritis is a distinct bar to the operation. Fixation of the uterus by perimetric inflammation contra-indicates its performance. Endometritis and acute cervicitis are sufficient, either combined or separately, to deter from the performance of the operation.

FIG. 35.—Lacerated Cervix held by Tenacula. (*Emmet*).

Obviously when the general health is much impaired —unless, indeed, the impairment depend on the laceration—it would be unwise to interfere.

But, on the contrary, if the cervix is raw, even if the area affected is small, and if there is some degree of chronic metritis, cervical or corporeal, associated with it, the operation should be undertaken, and will do good.

Again, if the cervix is bilaterally torn, and the edges

everted, and some cystic degeneration as well, then the performance of the operation is urgently demanded.

Further, if the laceration is healed, but the cervix nodular and tough, and if some nerve fibres have been embraced in the cicatrix, and are pressed or causing reflex irritation of the uterus or general system, this operation offers a speedy relief.

*Preparatory Treatment—*

It is of course desirable that the patient should be in as good general health as possible. This should be attempted by all means. A short preparatory stay in the country; regular, free action of the bowels by means of some of the well-known purgative waters, will be useful with the view of relieving all pelvic congestion. To still further relieve the congested uterus as well as the neighbouring tissues, hot water injections will be found of the greatest value. These should be employed twice daily, and continued regularly until all tenderness has disappeared. If there be any old-standing deposits in the broad ligament or in the surrounding cellular tissue, considerable benefit will be derived from the frequent use of iodine or blisters. The use of the glycerine plug in the manner already described will afford relief. When there is displacement, especially backwards, and sub-involution with increased weight of the uterus, a pessary will be found of advantage. The one which is of most frequent value is the Smith Hodge. It must be modified and altered to suit circumstances. It must give no pain, and the patient must be totally unconscious of its presence. Before

the application of the pessary the uterus should be anteverted. The ring pessary will sometimes be found a valuable substitute. This instrument should not stretch the vaginal walls.

When there is much eversion of the lips, accompanied by cystic degeneration of the mucous follicles, and consequently considerable congestion, this must be relieved by puncture. This can be easily accomplished by punctures here and there over the surface of the cervix. This should be carried out in the manner described under depletion of cervix. It is not necessary, however, that the punctures should be made with any degree of regularity. A few strokes with the knife across the surface of the cervix are enough. This depletion will reduce the size of the lips of the cervix very considerably.

After the scarification the surface should be brushed with strong tincture of iodine. The scarification and application of iodine should be repeated frequently until the surfaces are very much reduced in size. Dr Emmet suggests that some benefit will be gained by inserting one or two silver wires through each flap of the cervix, and so, temporarily, by twisting the ends together, keeping the flaps in apposition. This can only be done if the patient remains quite quiet.

*The Operation—*

After administrating an anæsthetic, place the patient on the left side and expose the cervix carefully with a Sims speculum. Each flap should then be seized by means of a tenaculum, and the two should be approxi-

mated and their size, shape, and lie with regard to one another should be carefully noted. Formerly Emmet used, at this stage, to apply the uterine torniquet. This he has found in the majority of cases uncalled for, as the administration of a simple hot water injection, just before the operation, will reduce the hæmor-

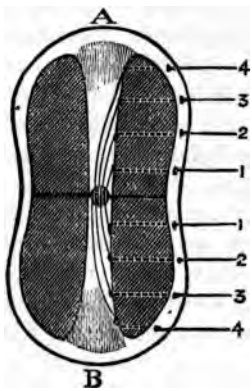



FIG. 36.—Shows application and course of Sutures.
A. Anterior lip. B. Posterior lip.

rhage to a minimum. Of course, in cases where the surfaces are large and soft, the use of the torniquet or some similar contrivance will be found essential to control the hæmorrhage.

With a pair of sharp scissors, and while the flaps are held asunder, the torn surfaces are to be freshened carefully from one lip to the other, leaving a broad undenuded tract in the centre. The undenuded part on one side should correspond with that on the other.

These when united are to form the continuation of the uterine canal. By drawing the uterus gently but steadily down to the vulva by means of a tenaculum in the hands of an assistant, the process of freshening will be rendered much more simple. Following the rule in depletion of the cervix, that portion which is lowest should be removed first, so as to prevent the view being obstructed by blood. Hooking the part up with a tenaculum, the strip should be removed in a single piece from one side to the other. The surfaces must be carefully clipped, so as to make the edges uniform and even. The denuded surfaces are then to be brought together by sutures.

In passing the suture, great care must be taken to secure the exact approximation of the raw surface. Sharp-pointed, short, round needles, first introduced by Emmet, are the best for this operation. The secret of the passing of the needles consists in having a proper needle-holder.

Three or four sutures are required for each side, if the laceration be double or extensive. The needles are introduced about a quarter of an inch from the edge, and are passed from above, downwards, about a third of an inch apart.

The stitches are then to be secured by twisting them, one after the other, beginning from above, downwards. They are to be cut off about half an inch in length, and to be bent so as to lie close on the surface of the neck. Thus placed, they will cause neither disturbance nor discomfort. Before the sutures are finally adjusted, it is well to wash out the vagina with some antiseptic wash. The most painful—according

to some the only painful—part of the operation is the introduction of the needles.

*After-Treatment—*

The vagina should be washed out daily with a warm carbolic wash. The urine should be drawn off with a catheter; and when this is not had recourse to, the vagina should be syringed after each micturition, to prevent any urine escaping and any remaining in the vagina. The sutures are removed on the seventh day, and they should be removed with care and gentleness. Remove the suture nearest the vaginal juncture, as if the wound gape the other sutures can be left in for some days longer. The patient should not sit up in bed for ten or twelve days. The bowels ought to be kept open.

*Complications and Difficulties—*

1. Hæmorrhage during the operation can best be controlled by hot water injections, or by a saturated solution of alum.

2. Passing the sutures. When the injury is of long standing, and as a consequence the tissues have become indurated, considerable trouble will be experienced in passing the needles. When such is the case, lance-shaped needles must be used instead of those already referred to.

3. If the uterus is retroverted, and if the patient before the operation has worn a pessary, this support should be introduced after the removal of the stitches, and before the patient stand on her feet again. From the rapid decrease in the size of the uterus, a smaller

pessary will be required than formerly. It is very important to keep the uterus anteverted.

4. If the patient has a lacerated perinæum, this ought to be repaired after the patient has recovered from the previous operation.

5. An attack of cellulitis may very easily follow the operation, and great care should be taken to prevent the patient exerting herself.

## CHAPTER V.

## *INTRA-UTERINE APPLICATIONS*

### Caustics, Astringents, Alteratives

*Indications—*

IN chronic endometritis with uterine leucorrhœa, more or less metrorrhagia and subinvolution, and in granular conditions of the endometrium.

*Contra-Indications—*

Acute inflammation of the uterus or its annexa.

*Substances Used—*

Iodine, nitrate of silver, nitric acid, carbolic acid, sulphate of zinc, chromic acid, perchloride of iron, acid nitrate of mercury, bromine.

*Methods of Employment—*

1. Atthill's Method.

Expose the cervix uteri with a duckbill speculum,

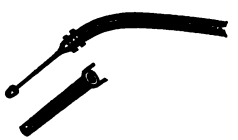


FIG. 37.

and fix it with a tenaculum. A full-sized Fergusson

speculum will suit well enough when an assistant is not at hand.

Atthill's canula is then to be introduced. It consists of a short tube, made of platinum. Fitting this canula accurately, is a stilette, which is fixed to a box-wood handle.

One of the ears of the canula is then to be seized and held steady by means of an ordinary long uterine polypus forceps, and the stilette withdrawn.

A copper or platinum rod, with a little cotton-wool carefully rolled round it, is to be dipped into the caustic, *e.g.*, nitric acid, and passed through the canula up to the fundus uteri.

*Advantages—*

(*a*) It prevents the caustic being weakened by coming in contact with any discharges.

(*b*) It protects the cervix from the action of the caustic.

*Difficulties in Introduction—*

Are usually trifling, for, as Atthill points out, the cases in which this form of treatment is indicated are usually accompanied by a patulous condition of the os. Dr Atthill further suggests that, in cases with a small os, the introduction of a tangle tent for twelve hours previously will secure sufficient dilatation.

*Precautions—*

(*a*) Be careful to seize the canula firmly with the forceps before withdrawing the stilette, otherwise it will slip either down into the vagina or up into the uterus.

(*b*) Be careful in fixing the cotton on the platinum or copper rod. I give Atthill's directions in his own words:—"Draw out the cotton, moisten the tip of the rod, catch but a few fibres of the cotton at first, and roll the rest slowly and evenly on. This is better effected by rotating the rod than by rolling the cotton round it. If these directions be not attended to, the cotton will wrinkle up as it passes through the canula, and will render the passage of the rod impossible; or, if loosely put on, may be left behind in the uterus when the rod is withdrawn."

(*c*) Do not take up too much of the caustic, otherit will trickle down and burn the vagina.

It is desirable that a glycerine vaginal plug be introduced before the withdrawal of the speculum.

2. Simpson's Porte Caustique for the application of Solid Nitrate of Silver.

Introduce the instrument in the same way and with the same precautions as the uterine sound. When the instrument is so far introduced that its point touches the fundus uteri, withdraw the stilette, and by means of it push up a piece of solid nitrate of silver.

Before allowing the silver to reach the end of the tube, withdraw the porte caustique about half-an-inch, to prevent the nitrate of silver being pushed into the mucous membrane of the uterus, instead of lying free in its cavity.

3. Dr J. W. Miller's Porte Caustique.

This instrument consists of a canula, 12 inches long, about the size of a No. 6 catheter, bent at an obtuse

angle, 2½ inches from distal end, and marked like a sound by a small projection at the same point, and a stilette, 2 inches longer than the canula, terminating in a button, which exactly fits the canula, so as either to close its open end or to be drawn within it, as desired. At this end of the stilette, a length of 2 inches is roughened, and at the near end of the roughened part is a wedge-shaped collar to facilitate the indrawing of the stilette when cotton has been wrapped on. The cotton is applied as Dr Atthill directs for his instrument, only it is better to commence at the collar. Having dipped the cotton in the caustic, the stilette is drawn into the canula, guiding it in so as to avoid scraping off cotton or caustic. Having wiped off any caustic on the outside, and warmed and oiled the instrument, it can be passed into the uterus without the aid of a speculum. If it is desired to cauterise the cavity, the instrument is passed to the fundus, which, having been reached, the canula is *withdrawn upon the stilette.* To apply a substance in powder, the stilette is drawn into the canula, leaving a small space into which the powder can be packed.

4. The cervix uteri may be dilated by sponge or tangle tents, and the cervix exposed with a duckbill speculum. The cavity of the uterus may then be swabbed with nitric acid, iodine, etc.

5. A very simple method of applying mild caustics, such as carbolic acid or iodine, is by means of the sound or Playfair's probe. The cervix is to be exposed with a duckbill or Fergusson speculum.

The end of the sound, or of Playfair's flexible coppe probe, is to be covered with cotton wadding and intro-

duced along the speculum into the cervix, and in this way any secretion is removed. A second probe, covered with cotton wadding and dipped in carbolic acid or iodine, is then to be introduced in the same way, and the caustic brought into contact with the endometrium.

5. Barnes considers the application of various substances in the form of ointment one of the most useful methods of intra-uterine medication, as "almost anything can be made into an ointment or pasma."

His instrument consists of a long silver or nickel catheter, having two long eyelet holes at the end, and a conical, well-fitting piston. The instrument is charged by plunging the end into the ointment. It is then simply passed like a sound into the uterus, and the piston being driven home deposits the ointment in contact with the mucous membrane.

Substances such as iodine, bromine, and mercury—the latter, *e.g.*, as the iodide in syphilitic disease of the mucous membrane—can thus be very conveniently applied.

By placing a piece of sponge in the end, and saturating it with any fluid, such as iodine, it answers almost equally well for solutions.

Another instrument, devised by Barnes, consists simply of a catheter with the end cut off, and furnished with a stilette or piston. This also is passed like a sound, and by its means slender solid sticks of, *e.g.*, sulphate of zinc, nitrate of silver (pure, or half and half with nitrate of potass), each weighing two or three grains, can be deposited in utero. Both these instruments are used without the speculum.

The injection of fluids into the cavity of the uterus

by means of a hollow sound and a graduated syringe, has been much employed, especially in France. It possesses no advantage over the methods I have just described, and as it is very dangerous, I should strongly advise against its use. One thing I must insist upon, viz., that if fluids are injected into the cavity of the uterus, care must be taken that the os is sufficiently patent to admit of their ready escape.

With so many medicaments and methods of application, the student is apt to be confused as to his choice in different cases. Without being dogmatic, I venture to throw out the following suggestions for his guidance :—

1st. In the simple cases of chronic endometritis the application of iodine or carbolic acid, by means of the probe, or Barnes' method of applying caustic or astringent ointments, should first be made trial of.

2d. Should these fail, or in cases where the cervix is gaping and the leucorrhœa and metrorrhagia marked, nitric acid or solid nitrate of silver should be employed at once by the methods already mentioned.

3d. In cases were the subinvolution and hæmorrhage are prominent symptoms, the sponge tent and subsequent swabbing with nitric acid or perchloride of iron are indicated.

4th. In cases of syphilitic disease the pernitrate of mercury will be found valuable. It can be applied either by Atthill's method or by the probe.

At the best the treatment of chronic endometritis is often disappointing, and the practitioner must be prepared frequently to substitute one caustic or alterative for another.

## Intra-uterine Curette

*Indication*—

*Hæmorrhage*—depending on

(*a*) Chronic endometritis, with fungous degeneration of the uterine mucous membrane.

(*b*) Retention of adherent placental villi after miscarriage.

(*c*) Diffuse sarcoma of the mucous membrane of the body of the uterus.

The object of the curette is to remove, by means of gentle scraping, the various morbid growths giving rise to the hæmorrhage.

Two methods of employing the intra-uterine curette for the purposes just mentioned are in use:—

1. The introduction of the dull wire curette without previous dilatation of the cervix, for simultaneous diagnosis and treatment, as recommended by Thomas.
2. Dilatation of the cervix uteri by sponge or tangle tents, the introduction of the finger within the cavum uteri to diagnose the morbid condition, and then the use of the finger nail, or a Sims curette, to remove the growth.

### The Dull Wire Curette, without Dilatation of the Cervix

The "dull wire curette, without cutting edge, is an instrument 9 inches long, 3½ inches of which form the

Fig. 38.

wooden handle, made of soft copper wire, $\frac{1}{6}$ inch thick

near the handle, and tapering down from $\frac{1}{12}$ to $\frac{1}{16}$ inch in thickness about $\frac{1}{2}$ inch from the end, where it is bent into an elliptical loop $\frac{1}{4}$ inch broad, the wire at the loop being flattened on the scraping surface."

The wire is soft and flexible, so that a very little pressure is sufficient to bend it.

*Method of Use—*

Anæsthesia is not required. The patient is to be placed in the left semi-prone position and the cervix exposed with a Sims speculum, which must, of course, be retained in position by an assistant. The anterior lip of the cervix is to be seized with a tenaculum, and the uterus drawn gently down. Introduce the uterine sound, and note the size and direction of the uterus. The curette is now to be bent to the shape of the uterus, and introduced along the cervix into its cavity. By drawing the loop of the curette along the surface of the mucous membrane, in a direction from fundus to os internum, the vegetations or placental remains will be scraped off. But little hæmorrhage, and almost no pain, accompany the operation.

As the curette is withdrawn it brings with it the vegetations and placental or carcinomatous fragments.

The curette should then be introduced a second time, and the loop made to traverse the whole surface of the endometrium, in order to make sure that all irregularities on its surface have been removed.

Mundé recommends the application of iodine after removal of the curette.

*The Advantages* of this method are—

1. No dilatation of the cervix is necessary. Even

in nulliparæ the os internum and os externum are sufficiently patent to admit the curette.

2. It does not confine the patient to bed for more than twenty-four hours; indeed, Thomas performs the operation in his consulting-room.
3. It can be performed very rapidly—in, say, five minutes.
4. From the softness of the curette, it is not liable to injure the uterine wall.
5. It is almost painless.
6. Where a use of the curette fails to detect any vegetation, no harm has been done, and the negative information so derived is of value.

### The Curette or Finger after Dilatation of the Cervix

The cervix uteri is dilated with a sponge tent sufficiently to admit of the introduction of the forefinger, as described on page 60.

The patient is to be placed on her back, with her legs drawn up. While the right forefinger is introduced into the cavity of the uterus, the left hand is placed on the hypogastrium over the uterus, and its fundus depressed, as described on page 18, under bimanual examination. The forefinger is then swept over the surface of the endometrium, and the presence of any irregularities on its surface noted. The examination will be the more complete and thorough if the patient be fully anæsthetised, and the fundus depressed by an assistant. The finger-nail then makes by far the most safe and satisfactory curette, and with it any placental remains or vegetations can be removed.

This operation will be rendered more easy if the cervix be dragged down by a volsella. The cavity of the uterus should then be brushed with iodine or nitrate of silver. This method is particularly useful for securing the complete evacuation of the uterus after abortion.

The introduction of sharp curettes, such as those of Sims or Simon, is to be avoided.

Immediately after the operation a morphia suppository should be introduced, and strict rest in bed enjoined for at least a week. It is desirable to wash out the vagina with a weak solution of Condy's Fluid or carbolic acid.

The first of these methods is worthy of trial before having recourse to the second.

## Operative Interference in Fibroids and Polypi

*Mucous and glandular polypi* are common. They are seldom single, and are very apt to return after removal.

They are either sessile or pedunculated, occur in the cervix, and vary in size from a small pea to a large bean. Sometimes glandular polypi become cystic.

The treatment is simple. They should be twisted off with a pair of forceps, and the base touched with liquor ferri perchloridi or nitric acid.

When they occur in groups within the cervical canal, the introduction of a sponge tent will often cause sufficient pressure to make them disappear altogether.

Sometimes small mucous polypi occur within the uterus. They give rise to very considerable hæmorrhage. Their removal is simple. An ordinary Thomas'

curette will often be sufficient. I have already described its use.

It may sometimes be necessary to dilate the cervix, and use a sharp curette, but more frequently this is not required. It is always better not to remove mucous polypi with the knife, as this method of removal is apt to be accompanied by very considerable hæmorrhage.

The operative treatment of fibroid tumours of the uterus may be readily considered under the following heads:—

1. Subcutaneous injection of ergotin.
2. Altering the position of the tumour.
3. Torsion.
4. Removal by polyptome, ecraseur, or scissors.
5. Enucleation.
6. Division of the cervix.

### I. Subcutaneous Injection of Ergotin

This method, introduced by Hildebrandt, and supported by White, Byford, Simpson, and Chrobak, can hardly be called an operation; still it may be very fairly described here.

*Object of the Injection*—

To act on the partially developed muscular fibres of the uterus, and so lead to one or other or all of the following results:—

1. Diminution of hæmorrhage.
2. Diminution of tumour.
3. Pedunculation of tumour.
4. Extrusion of the tumour.

*Selection of Cases*—

These tumours which are intra-parietal, rich in

vessels, and in which, therefore, hæmorrhage is a prominent symptom, are most readily influenced by this form of treatment. The tumours must be surrounded by more or less developed muscular fibres. The effect of the ergotin upon these fibres is to push the tumour to the surface, and so form a pedicle, and further, to press it towards the cervix. By throwing the muscular fibres into contraction, the blood supply to the tumour is diminished, and the hæmorrhage is lessened.

*Method of administration—*

With an ordinary hypodermic syringe.

Note the following points:—

1. See that the solution of ergotin is fresh, and contains no bacteria.
2. Be careful to expel all air.
3. Plunge the needle deep into the muscular tissues.

*Solution to be used—*

℞ Ergotinæ, ℥ii.
Chloral Hydratis, ℥ss.
Aquæ, ℥vi.

*Sig.* Twelve drops a medium dose.

*Part to select—*

Usually the gluteal region, sometimes the abdominal wall, but as a rule the buttock is the most convenient part.

*Frequency of administration—*

Once daily, or every second day, or twice a week after the action of the drug is manifested.

*Objection and Contra-Indications—*

1. *Pain.* This is but momentary, and even after many injections, is not complained of to any great

extent by the patient. Sometimes, however, the patient does complain grievously of the injections.

2. *Cardiac disease.* This has been urged as a contra-indication; but as has has been shown by Simpson, ergotin may be safely pushed in such cases.

3. It is said to disturb nutrition, and to cause cerebral symptoms; but with due care and caution such are most unlikely.

*Risks—*

1. Erythema. Usually a slight transient blush follows the injection.

2. Inflammation of the cellular tissue, in the shape of circumscribed hardness round the seat of puncture is not by any means uncommon. It seldom goes the length of

3. Erysipelas, or

4. Suppuration.

II. ALTERING THE POSITION OF THE TUMOUR

1. When the tumour occupies the space of Douglas retroverting the uterus, causing, as it does, retention of urine, tenderness, and very great general discomfort, enormous relief will often be obtained by pushing the incarcerated body out of its position, throwing it forwards, and, if possible, retaining it there, so that it may grow in the direction of least resistance.

This can be done,

(*a*) By placing the patient semiprone, and by pressing two fingers against the retroverted uterus, and gently but steadily pressing it upwards and forwards to one or other side of the sacral promontory.

(*b*) This can be often aided by dragging the cervix downwards and backwards.

(*c*) By placing the patient in the knee-chest position, the reduction will sometimes be more readily brought about.

(*d*) Two fingers in the rectum pushing upwards and forwards, and two in the vagina dragging the cervix downwards, with the patient in either of the positions first mentioned, are of service.

(*e*) The introduction of the sound into the uterine cavity, and the replacement of the uterus by this means is often sufficient to drag a small fibroid into position.

(*f*) The induction of anæsthesia will greatly facilitate the operation. A properly-fitting Smith-Hodge pessary will retain the mass *in situ*, after it has been replaced.

2. A fibroid in the peritoneal cavity, attached to the uterus by a long pedicle, often gives rise to very considerable discomfort, by constantly moving about. This can often be overcome by wearing a bandage and a properly fitting pad.

### III. Torsion

Whether the tumour be large enough to occupy the vagina, or simply project into or through the cervix, or whether it be entirely in the cavity of the uterus and require the use of tents to reach it, torsion should be employed. This is equally the case whether the tumour is pedunculated or sessile, large or small.

Torsion is, in the first instance, the most convenient method of attacking these growths.

*Method of Procedure—*

1. The tumour is intra-uterine. Having dilated the cervix thoroughly by means first of large tupelo, and then by one large sponge tent, the finger is introduced along the open cervix, and at the same time the fundus is depressed supra-pubically. The finger will easily reach the smooth surface of the fibroid just within the os internum.

An ordinary volsella is introduced in the way already described.

The body of the tumour is seized. In doing so, it is desirable to get the blades firmly fixed as well up as possible. The tumour is then to be rotated round and round in the same direction. When the tumour is small, say as large as a walnut or an orange, but very little rotation is required. Firm traction will readily pull the tumour down through the cervix into the vagina, whence a little manipulation will readily deliver it. With a large tumour two or more volsellæ may be required.

Almost no hæmorrhage follows. After the operation the vagina should be syringed with an antiseptic wash. Then an opiate should be administered.

The induction of anæsthesia will depend on the temperament of the patient and the size of the tumour. The use of an anæsthetic renders the operation much more satisfactory.

2. The tumour projects through the cervix. Torsion is here simple, and requires no description.

3. The tumour is found occupying and distending the vagina. Having differentiated it from malignant disease—with which, from the ulceration and œdema,

it is sometimes mistaken—and from an inverted uterus, torsion is now to be attempted. Seizing the tumour with a pair of strong forceps or volsella, the mass is to be slowly rotated until its attachment gives way.

The mass is then to be dragged through the ostium vaginæ, which is sometimes no easy matter. Before it can be dragged through it may require to be reduced in size. This can be done by removing a central portion, and so allowing the mass, as it were, to collapse. Portions may be removed by the ecraseur or by Simon's curette. Very considerable patience and perseverance will often be required in extracting a large fibroid through a narrow ostium. I have seen Professor A. R. Simpson over two hours before he succeeded in freeing such a tumour from the vagina. Tumours of such dimensions are comparatively rare. Small or moderately sized fibroids give rise to no such trouble. Once they are reached, twisted and drawn through the cervix, any further trouble is at an end.

In endeavouring to break up and remove the large vaginal mass, sometimes very considerable hæmorrhage takes place from the tumour. The pressure of the forceps, as a rule, keeps this in check.

### IV. Removal by Polyptome, Ecraseur, or Scissors

In cases where the pedicle is too firm, thick, or resistant to admit of being twisted through by torsion, any of these instruments will cut it through.

The least satisfactory is the polyptome, which, if the tumour is high, or the vagina filled, is difficult of introduction, still more difficult to adjust, and often cuts the pedicle through obliquely.

The ecraseur, whether wire or chain, is a convenient method of dealing with the pedicle. The cervix must be well dilated, and the loop passed up into the uterine cavity. This is difficult to accomplish, and a long wire will often be required to push up the loop.

The chain ecraseur is perhaps more satisfactory than the wire. One caution must not be omitted, viz., the operator should always have a second ecraseur to fall back on, as, if the pedicle is at all dense, the loop is apt to break. I have seen this happen repeatedly.

Again, while applying the ecraseur, care must be taken not to drag on the tumour, as frequently a certain amount of inversion exists, and traction will bring about or exaggerate this, and so a portion of the fundus may be removed along with the base of the tumour.

The cutting through the base must be conducted very slowly. There is not usually much hæmorrhage, and if there be any, it should be checked by means of the cautery or perchloride of iron.

Sometimes the pedicle can be cut slowly through with scissors. These, however, and still more so the amputation of the tumour by the knife, are apt to be accompanied by very considerable hæmorrhage.

A. R. Simpson has devised a nail curette, which is most useful in cutting through the base of such tumours. It is of very simple construction. The flat, sharp point resembles the finger, for which Simpson intended it to be a substitute; "the slightly curved stem is long enough to be easily carried up to the fundus uteri, and so slender as not to occupy much space in the canal; the handle is broad and square, to give a good hold in the working of it, and roughened

on all sides, except on the surface, towards which the sharp edge of the instrument is directed."

The tumour can either be dragged down by an assistant with a volsella, or steadied from above by supra-pubic pressure. The point is guided to the root of the tumour by the index-finger of the right hand, which closely follows it through the various tissues, the handle being worked by the left hand.

### V. Enucleation

Consists in cutting through the capsule, and (*a*) removing the tumour at once; or (*b*) leaving the tumour attached, and depending for its extrusion on the free administration of ergot.

*Nature of the cases in which it is indicated—*

It is specially applicable in those encapsuled fibroids which, though they cannot be removed by torsion or any of the methods already referred to, yet project into the cavity of the uterus, or even show a tendency to spontaneous expulsion.

Care must be taken in selecting cases for this form of treatment that the uterine wall is strong enough to bear the strain of extraction, otherwise an opening may easily be made into the peritoneal cavity.

*Risks—*

The operation is undoubtedly a dangerous one, and certainly not to be undertaken without very serious consideration.

The hæmorrhage is sometimes great, and may prove fatal when the patient has been exhausted by previous hæmorrhages. Septicæmia, especially when the second variety of enucleation is adopted, is apt to occur. I

have already mentioned the possibility of opening into the peritoneal cavity. Exhaustion, cellulitis, peritonitis, are among the complications which render this operation dangerous. When it is possible the operation should be performed at one sitting.

*The Operation—*

The cervix must be well dilated by means of tupelo or sponge tents, and the vagina stretched by means of Barnes' bags. These bags will often be required to complete the dilatation of the cervix. The greater the amount of dilatation of the cervix, the easier will be the operation. Having secured this, and having carefully washed out the vagina with an antiseptic lotion, the patient should be anæsthetised.

The lithotomy position is the most satisfactory. While the uterus is steadied by the hands of an assistant, the operator carries a long-handled, probe-pointed bistoury up to the most readily accessible part of the tumour, and makes a crucial incision through the capsule. The forefinger is then introduced into the incision, and the tumour separated from its capsule.

It is then seized with strong forceps or the volsella, and dragged downwards, while its attachment is cut through by means of the finger nail or the curette already described.

If the tumour cannot thus be removed, or if perseverance in avulsion is deemed undesirable, then ergot should be systematically administered.

The patient should be kept in bed, and the vagina well washed with some antiseptic. Sometimes, after a varying length of time, spontaneous enucleation of the tumour takes place. The process may be hastened,

after the ergot has been used for sometime, by making traction and rotation on the tumour. If the tumour is very large, then pieces of it must be removed in a similar manner as described in removing similar tumours when they have descended into the vagina.

*After-treatment—*

After removal of the tumour, strict cleanliness must be maintained. The uterus should be washed out with hot water. If there be hæmorrhage, it can readily be checked by the application of tincture of iodine.

Pledgets of cotton, soaked in perchloride of iron, may be applied for a few hours, and, after their removal, a disinfectant should be used. Glycerine plugs should then be introduced into the uterus and vagina. After a day or two, nothing beyond a simple disinfectant is required.

Ergot should steadily be pressed.

### VI. Division of the Cervix

In cases where the hæmorrhage is very profuse, lateral division of the cervix has been recommended and practised. Occasionally the results have been gratifying, owing to increased uterine action causing the tumour to descend deeper in the uterine cavity, and arresting hæmorrhage by contraction.

It is seldom good practice to remove a portion of the tumour. Better to leave it alone or remove it all.

Various methods have been suggested and employed by way of destroying the vitality of the tumour, causing sloughing and discharge.

Simpson used to introduce a piece of caustic into the interior of the tumour for this purpose.

Atlee established the practice of removing a section of the tumour.

Barnes suggested igneous hysterotomy, which consists of burning a hole in the tumour by means of the actual, benzoline, or galvanic cautery, and thus bringing about sloughing and expulsion of the tumour through the aperture so formed.

Two sets of cases are said to lend themselves to this form of treatment—1st. Those where the tumour is in the posterior uterine wall, causing retroversion. Under such circumstances the cautery is thrust through the posterior vaginal wall into the cavity of the tumour itself. 2d. Where the tumour is low down in the cervix.

All these methods are unquestionably very dangerous, more especially from blood poisoning, and they should never be had recourse to unless as a last resort.

Removal of the ovaries—normal ovariotomy—is indicated when the tumour cannot be removed, when the hæmorrhage is so profuse as to threaten life, and when the patient is still far from the menopause.

This spaying for fibroid tumours of the womb was first practised by Goodell, Trenholme, and Hegar with success—that is, the hæmorrhage ceased, and the fibroids shrank away.

The removal of the uterus when enlarged by these tumours is certainly one of the most formidable operations that can be undertaken. Abdominal surgery is, however, outside the scope of this work.

In cases of *fibro-cystic tumours* the distension may become so great as to require relief by tapping. They are generally very slow in their growth, but they may

ultimately give rise to a very great deal of discomfort by distension.

Tapping, in such cases, must be performed by means of an aspirator, and with a very fine needle.

The operation is attended with very much greater risk than tapping in ovarian disease. The sac is much more vascular, and hence much more likely to become inflamed.

## Inversion of Uterus

Inversion of the uterus may occur as a result of labour, and in a large majority of cases it is associated with the parturient or puerperal conditions. It may, however, occur quite independently, as in cases where a polypus is attached to the fundus, and where expulsive contractions being set up, the organ becomes more or less inverted. If inversion occur at the time of delivery, it ought to be reduced at once. Reduction of the tumour is easy in proportion as it is attempted early. No time, therefore, ought to be lost in reducing the inverted uterus after labour, whether the accident occur before or after the completion of the third stage. In treating this accident, the main indication is to turn the uterus on itself so as to allow the surfaces to resume their relative positions; and the main obstacle to treatment is the resistance offered by the muscular fibres of the lower segment of the uterus.

1st. *If during the third stage.* Although authorities differ, yet it appears that the safest as well as the easiest plan is to remove the placenta, and then, with the patient under the influence of an anæsthetic, to apply pressure on the fundus. This is accomplished in the following way:—The patient is placed in the recumbent

position on the edge of the bed, or the semi-prone position may be adopted. Pressure should be made above the pubes by the hands of an assistant to prevent rupture of the vagina; then, with the fist pressed against the lower portion of the fundus, steady pressure upwards and backwards should be made. Care should be taken that the pressure be made to one or other side of the sacral promontory. The hands are better than any form of instrument, and special care must be taken that pressure be made above the pubes so as to fix the uterus. If the inversion be but partial, the fundus being only depressed and not inverted through the cervix, then the mere introduction of the hand into the uterus is sufficient to reduce the displacement. Under such circumstances, the placenta should not be removed at first, in case of aggravating the inversion; but, uterine contractions being maintained, the hand can afterwards be introduced if necessary. If, after the occurrence of the accident, the uterine action is powerful, and the inverted fundus is caught by the cervix, then, while the patient is well under chloroform, the upper portion should be first seized and pressed upwards to one side. It must be kept in view that although an inversion is simple enough at its commencement, it soon becomes complicated by congestion and inflammation. Noeggerath and Lusk both favour the method which consists in indenting the uterus in the neighbourhood of a Fallopian tube instead of pressing on the fundus. After the uterus is reinverted, the hand should be allowed to remain within it, and the external pressure continued until firm contraction is secured.

2d. *In chronic inversion.* Two methods of treatment

are recommended; one by slow continuous pressure, and the second by rapid taxis. The obstacles to the reduction of the uterus are mainly the hardness of the organ, the rigidity and chiefly the want of fixation of the cervix. In any case it is best to choose the intermenstrual period as the one most favourable for operations, the organ not being then congested, and consequently less in bulk.

1st. *Slow continuous elastic pressure.*—This can be accomplished by introducing an air-ball pessary into the vagina, and leaving it there, kept closely applied to the uterus by means of a T bandage. This continued pressure causes the cervix to soften and dilate, and allows the return of the uterus to its right position. If uterine pains are occasioned by this, then it is well to attempt to push back the organ from time to time in the interval of the contractions. Such continued pressure, however, is often not well borne by patients,

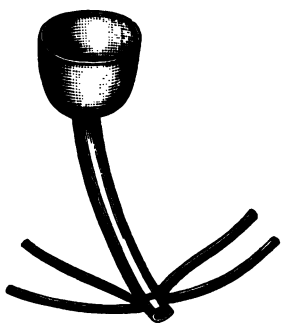


Fig. 39.—Cup for Inversion.

having in many cases to be kept up for weeks or months. Nor is it free from danger, cases being recorded where

it has set up fatal peritonitis. As it has resulted in a cure, it is well worthy, however, of a trial. The same can be accomplished by the use of a wooden cup and stem, such as figured in the foregoing diagram. Such an instrument is introduced into the vagina, and steady pressure is kept up by four elastic bands which run from the end of the stem to an abdominal bandage. Two of these elastic bands are posterior, and two anterior. Care must be taken that the cup does not make injurious pressure. In order to avoid this, the instrument must be carefully watched, and the edge of the cup padded with cotton wool. Counter pressure must be exerted above the pubes by a pad retained in situ by means of a broad bandage. It must further be noted that the pressure be made in the proper axes. The pressure may last over many weeks.

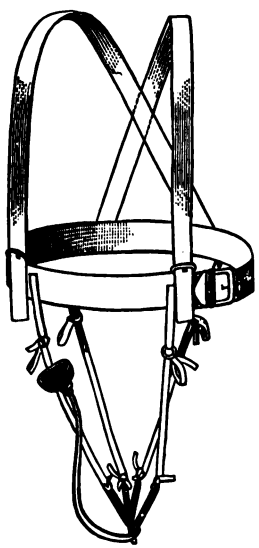


Fig. 40.
Aveling's Uterine Repositor.

Aveling's repositor, figured in the accompanying diagram, acts much in the same way, the cup-shaped extremity being applied to the inverted uterus, and pressure kept up by elastic bands. The stem, possessing a perinæal and pelvic curve, allows the straps to be so adjusted that the pressure is maintained in the axis

of the uterus and inlet. While the pressure is going on, the patient should be kept in bed, and partially under the influence of morphia.

2d. *Rapid taxis* may be accomplished either by the hand or by instruments. It is, however, an exceedingly dangerous proceeding, from the risk of lacerating the vagina and injuring other organs, as well as setting up inflammation. Reposition by the hand or instruments, if attempted, may be carried out in the following way:—Having prepared the patient by means of rest and hot water injections, she is to be placed under chloroform in the lithotomy position, and the uterus seized as near the neck as possible, and pressure made upwards against the hand, fixing the cervix suprapubically. White, of Buffalo, has used a repositor in the following way:—It has a curved stem having a spiral spring of steel wire at the proximal end, the uterine extremity being cup-shaped and padded with rubber. This is carried up and adapted to the fundus, against which it is retained by the hand, the spring being placed against the operator's breast, and when counter pressure is made by the hand externally, steady pressure is kept up on the inverted fundus. Amputation of the entire organ for irreducible inversion does not fall within the scope of this work.

## ARMAMENTARIUM

The instruments required in ordinary practice, apart from operations, are—

1. An ordinary uterine sound.
2. A set of Fergusson's specula.
3. A Sims speculum (Bozeman's modification).
4. Spongeholder
5. Two tenaculæ.
6. Two volsellæ.
7. Knife for depletion.
8. An assortment of pessaries.
9. A Higginson syringe.
10. A pair of long dressing forceps.
11. Porte pinceau.
12. Tents.

# INDEX


PAGE

Abdomen, examination of - - - - - - 21
Abscess of labium - - - - - - - - 24, 71
,, perinæum - - - - - - - - 73
,, vulvo-vaginal glands - - - - - - 74
Amputation of cervix - - - - - - - 145
Atthill's canula - - - - - - - - 157
Anteflexion, pessaries for - - - - - - 104
Anteversion, pessaries for - - - - - - 102
Armamentarium - - - - - - - - 183
Aspirator, use of in gynecology - - - - - 68
,, ,, fibro-cystic tumours - - - 177

Barnes' ointment positor - - - - - - 161
Bi-manual Examination - - - - - - 18
,, ,, on cadaver - - - - - 9
Bladder, examination per urethram - - - - 112
,, injection and washing out of - - - - 115

Calculus, removal of, by vaginal lithotomy - - - 121
,, ,, Ogston's method - - - 120
Carunculæ myrtiformes - - - - - - - 4
Caruncle of urethra - - - - - - - 24
Catheterisation - - - - - - - - 109
Caustics, application of, to cervix - - - - 140
,, ,, endometrium - - - 157
Cautery, actual, in gynecology - - - - - 143
Cervix uteri, abnormal position of - - - - - 26
,, amputation of - - - - - - 145
,, description of - - - - - - 6
,, division of, in fibroids - - - - 176
depletion of - - - - - - 136

PAGE

Cervix uteri, dilatation of, by tents, etc. - - - 60
,, examination of - - - - - - - 17
,, foreign bodies in - - - - - - 28
,, incision of - - - - - - - 147
,, laceration of - - - - - - - 149
,, ,, operation for - - - - 149
Clitoris - - - - - - - - - - 2
Condylomata of vulva - - - - - - - - 72
Curette, intra-uterine - - - - - - - - 163
,, A. R. Simpson's - - - - - - - 173
Cusco's speculum - - - - - - - - - 44
Cutter's pessary - - - - - - - - - 97
Cystitis - - - - - - - - - - 115
Cystocele - - - - - - - - - - 24

Depletion of cervix - - - - - - - - 136
Dilatation of cervix - - - - - - - - 61
,, urethra - - - - - - - - 112
Discharges, vaginal - - - - - - - - 25
Douche, vaginal - - - - - - - - - 81
Douglas, pouch of - - - - - - - - - 11
,, ,, compartments of - - - - 12
,, ,, morbid conditions in - - - - 28

Ecraseur in fibroids - - - - - - - - 167
Enucleation of fibroids - - - - - - - 174
Ergotin, hypodermic injection of - - - - - 167

Faradisation of bladder - - - - - - - - 123
Fergusson's speculum - - - - - - - - 43
Fibroid of uterus, treatment of - - - - - 166
Fourchette - - - - - - - - - - 2
Fossa navicularis - - - - - - - - - 2
Frenum chlorides - - - - - - - - - 2

Gariel air-ball pessary - - - - - - - - 97
Glycerine tampon - - - - - - - - - 90

PAGE

Greenhalgh's intra-uterine stem - - - - - - 107

Hæmatocele - - - - - - - - - - 30
Hewitt's pessary cradle - - - - - - - - 102
,, ,, ring - - - - - - - - 96
Higginson's syringe - - - - - - - - 82
Hymen, bulging of - - - - - - - - 25
,, description of - - - - - - - - 2
,, examination of - - - - - - - 24
,, imperforate, operation for - - - - 74
,, varieties - - - - - - - - - 4

Incontinence of urine - - - - - - - - 122
Inspection of abdomen - - - - - - - - 21
Intra-uterine applications - - - - - - - 157
,, ,, by canula - - - - - 157
,, ,, by porte-caustique - - - 159
,, ,, by sound - - - - 160
,, ,, after dilatation by tents - - 160
,, ,, by ointment positor - - 161
,, curette - - - - - - - - 163
nversion of uterus - - - - - - - - 178
,, ,, Aveling's repositor for - - - 181
,, ,, rapid taxis of - - - - - 182

Kuchenmeister's scissors - - - - - - 148

Labia majora - - - - - - - - - 2
,, abscess of - - - - - - - - 24, 71
Labia minora - - - - - - - - - 2
,, hypertrophy of - - - - - 72
Laceration of cervix - - - - - - - - 149
,, ,, Emmett's operation for - - - 149
Leeches to cervix - - - - - - - - - 137
Lithotomy per vaginam - - - - - - - 121

Meatus urinarius - - - - - - - - - 2

PAGE
Miller's porte-caustique - - - - - - - - 156
Meig's ring pessary - - - - - - - - 96
Mons veneris - - - - - - - - - 2

Nymphæ - - - - - - - - - - 2
,, hypertrophy of - - - - - - - 72

Ogston's method of removing calculi - - - - 120
Os uteri, description of - - - - - - - 7
,, dilatation of, by tents - - - - - - 62
,, examination of - - - - - - - 17
,, foreign bodies in - - - - - - - 28
Ovaries, description of - - - - - - - 10
,, alterations in position of - - - - - 32

Paquelin's cautery - - - - - - - - 143
Parametrium, relations of - - - - - - 13
Perinæum, abscess of - - - - - - - 73
,, description of - - - - - - - 2
,, operations for rupture of - - - - 75
Pessaries, medicated - - - - - - - 93
,, mechanical - - - - - - - - 94
,, for anteversion and flexion - - - - 102
,, for prolapsus - - - - - - - - 95
,, for retroversion and flexion - - - - 99
Pessary, Cutter - - - - - - - - - 92
,, Gariel - - - - - - - - - 97
,, Greenhalgh - - - - - - - - 107
,, Hewett - - - - - - - - - 102
,, Hodge - - - - - - - - - 99
,, Meigs - - - - - - - - - 95
,, Simpson's stem - - - - - - - 106
,, Smith-Hodge - - - - - - - - 99
,, Thomas' anteversion - - - - - 104
,, Zwanks - - - - - - - - - 96
Polyptome in fibroids - - - - - - - 172
Pouch of Douglas - - - - - - - - 11, 28

PAGE

Porte-caustique, Miller's - - - - - - - 159
,, ,, Simpson's - - - - - - - 159
Procidentia uteri - - - - - - - - - 24
Puncture of cervix - - - - - - - - - 139

Rectocele - - - - - - - - - - 24
Rectum, examination of, by eversion of - - - - 34
,, ,, recto-vaginal touch - - 35
,, ,, Simon's method - - - 36
Reposition of uterus by sound - - - - - 55
Retroflexion, pessaries for - - - - - - 99
Retroversion, pessaries for - - - - - - 99
Ring pessary - - - - - - - - - 96
Rugæ of vagina - - - - - - - - - 5

Scarification of cervix - - - - - - - 139
Simon's dilators - - - - - - - - 113
Simpson's porte-caustique - - - - - - 159
,, sound - - - - - - - - - 50
,, stem - - - - - - - - - 106
,, A.R., nail curette - - - - - - 173
Sound, uterine - - - - - - - - - 50
,, contra-indications for - - - - 51
,, information to be gained by - - - 51
,, as a uterine repositor - - - - 55
,, dangers - - - - - - - - 56
Space of Douglas - - - - - - - - 11
,, foreign bodies in - - - - - 28
Speculum, bi-valve - - - - - - - - 44
,, duckbill - - - - - - - - 45
,, tubular - - - - - - - - 43
Sponge tents - - - - - - - - - 60
Syphon douche - - - - - - - - - 81

Tampon, vaginal - - - - - - - - - 88
Tenaculum - - - - - - - - - - 57
Tents, sponge - - - - - - - - - 60
,, tangle and tupelo - - - - - - - 61

PAGE
Tents, dangers of - - - - - - - - - 63
,, indications for - - - - - - - - 62
,, Sims' mode of introducing - - - - - 65
,, relative advantages of - - - - - - 61
Thomas' curette - - - - - - - - - 163
,, pessary - - - - - - - - - 104
Torsion, in removal of fibroids - - - - - 170
Trachelorrhaphy - - - - - - - - - 149

Urethra, dilatation of - - - - - - - - 112
Urethral caruncle - - - - - - - - 24, 117
,, bougies, medicated - - - - - - - 119
,, injections - - - - - - - - - 118
,, prolapsus - - - - - - - - - 117
,, venous angiome - - - - - - - 117
Uterus, anatomy of - - - - - - - - 8
,, applications to cavity of - - - - - 157
,, inversion of - - - - - - - - 178
,, ,, Aveling's repositor for - - - 181
,, ,, rapid taxis - - - - - 182
,, ,, reduction of - - - - - 179
,, fibroid tumours of, treatment - - - - 166

Vagina, anatomy of - - - - - - - - 4
,, roof of - - - - - - - - - 17
,, rugæ of - - - - - - - - - 5
,, variations in capacity of - - - - - 25
,, ,, length of - - - - - 25
Vaginal discharges - - - - - - - - 25
,, examination - - - - - - - - 15
,, ,, indications for - - - - 13
,, injections - - - - - - - - 80
,, lithotomy - - - - - - - - 121
,, pessaries - - - - - - - - - 93
,, tampon - - - - - - - - - 88
Vaginismus - - - - - - - - - 24
,, treatment of - - - - - - - - 79

PAGE

Vesical calculus - - - - - - - - - 119
,, ,, Ogston's method of removal - - - 120
,, injections - - - - - - - - - 115
,, sound - - - - - - - - - 39
Vesico-vaginal fistula - - - - - - - - 125
,, ,, operation for - - - - - 129
Vestibule - - - - - - - - - - 2
Volsella - - - - - - - - - - 58
Vulva - - - - - - - - - - - 2
,, condylomata of - - - - - - - 72
,, occlusion of - - - - - - - - 72
,, pruritus of - - - - - - - - 72
,, visual examination of - - - - - - 24
,, warts of - - - - - - - - - 72
Vulvo-vaginal glands, abscess of - - - - - 71
White's uterine repositor - - - - - - 182